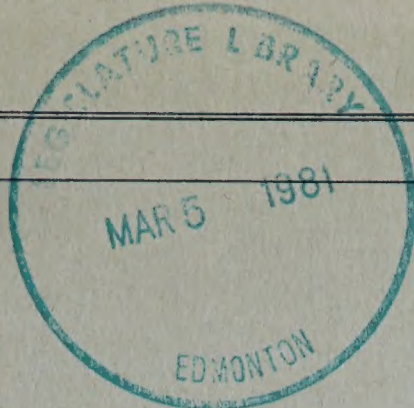


CH 2422  
50 H22  
Apr 12/50  
Vol 19



# The Province of Alberta

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## PETROLEUM AND NATURAL GAS CONSERVATION BOARD

IN THE MATTER OF THE GAS RESOURCES PRESERVATION ACT

AND IN THE MATTER OF the application of Westcoast Transmission Company Limited and Westcoast Transmission Company Ltd. (Alberta Incorporation) for a permit authorizing the purchase and sale of Natural Gas in the Province of Alberta for transmission to points in the Province of British Columbia and the States of Washington and Oregon in the United States of America.

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I. N. McKinnon Esq., Chairman

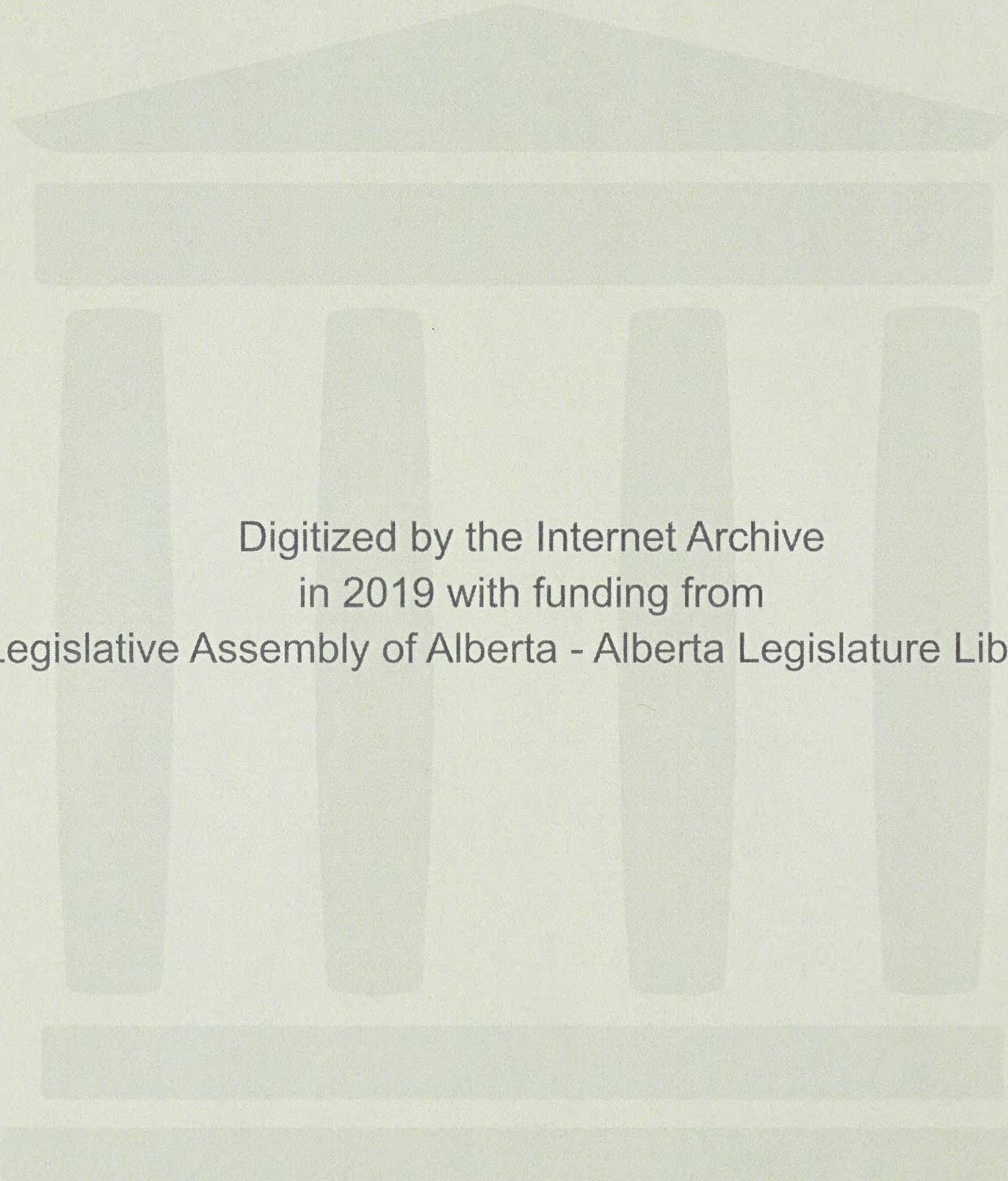
D. P. Goodall Esq.

Dr. G. W. Govier

**Session:** APRIL 12th, 1950.

**Volume** 19





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April 12th, 1950.

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W. B. Poor,  
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WILLIAM B. POOR (Recalled)

already sworn, examined by Mr. McDonald, testified as follows:

Q Mr. Poor, you are still under oath in these proceedings?

A I am.

Q At the close of your examination on the last Sittings of the Board you dealt with the matter of load factors, the effect of load factor on price to the producer and price to the consumer. You read into the record a number of conclusions that you had arrived at. Since that time you reduced your working papers to a statement which is now submitted?

A That is correct.

Q This is effective load factor on price to producer and price to consumer. I tender that as an exhibit, sir.

EFFECTIVE LOAD FACTOR ON  
PRICE TO PRODUCER AND PRICE  
TO CONSUMER PUT IN AND  
MARKED EXHIBIT 92.

Q Now, would you be good enough, Mr. Poor, to review this statement?

A The basis of this tabulation is the fifth year of operation and the Table merely shows the effect of load factor working between the limits of 58% and 100%, as stated, showing (1) the effect of the city gate rate if all other factors remain constant wherein the city gate rate or sales price varies between the limits of 31.3 cents per Mcf. under 58% load factor, to as low as 22.8 cents at 100% load factor.



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April 12, 1930

WILLIAM E. FOOR (Witness)

Witness sworn, examined by Mr. McManis, testified as follows:

Q Mr. Foor, you are still under oath as these proceedings?

A Yes.

Q At the close of your examination on the last sitting of the Board you dealt with the matter of load factors, the effect of load factor on price to the producer and price

to the consumer. You said that the load factor is a number of computations that you had arrived at. Since that time you prepared your working papers to a statement which is now

submitted.

A That is correct.

Q This is effective load factor as price to producer and price to consumer. I tender that as an exhibit, sir.

EFFECTIVE LOAD FACTOR ON  
PRICE TO PRODUCER AND PRICE  
TO CONSUMER SET IN AND  
MARKED EXHIBIT 12.

Q Now, would you be good enough, Mr. Foor, to review this statement?

A The basis of this tabulation is the fifth year of operation and the table merely shows the effect of load factor working between the limits of 50% and 100%, as stated, showing (1) the effect of the city gas rate if all other factors remain constant whereas the city gas rate or sales price varies between the limits of 21.3 cents per Mf. under 50% load factor, to as low as 22.8 cents at 100% load factor.



W. B. Poor,  
Dir. Exam. by Mr. McDonald.

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The second tabulation shows the effect on the cost of gas at the well head on the assumption that transportation costs and gathering costs remain constant, that the sales prices remain at constant, showing the variation from 5 cents at the well head and 58% load factor, to a high of 13.5 cents per Mcf. at 100% load factor.

Q I might ask you these questions, Mr. Poor. Above the line, the first black line, the left hand corner, 100% load factor statement shows that if the line was operated at its absolute capacity the sales at the other end of the line could be 104 billion during the year?

A That is correct.

Q And it goes down to 60 billion at 58%, 60,638 MMcf.?

A That is correct.

Q Now, you have used as your example here the pipe line from Edmonton to Vancouver?

A That is correct.

Q And the transportation cost of 20.3 cents under the item 58% in the second grouping is the transportation cost which will be shown by an exhibit which you will submit this morning on fifth year operation?

A That is correct.

Q Gathering cost 6 cents, which corresponds to the 5.9 cents in the gathering costs shown by the Exhibit previously filed?

A That is correct.

Q And 5 cents is shown as an arbitrary cost of gas selected for the purposes of the illustration?







W. B. Poor,  
Dir. Exam. by Mr. McDonald.

- 1350 -

A That is correct.

Q So insofar as the summary is concerned, the cost could be reduced from 31.3 for 58% load factor to 22.8% for 100% load factor?

A That is right.

Q On the other hand, the benefits that would accrue to the producer is based on a rise from 5 cents at 58% load factor to 13.5 cents at 100% load factor?

A That is correct.

Q Have you any further comments you wish to make on that statement, Mr. Poor?

A No.

Q At my request, you prepared an exhibit which is Ford, Bacon & Davis 7-A, which is the estimated construction cost of natural gas pipe line systems Westcoast Transmission Company Limited, Westcoast Transmission Company Ltd., and the United States affiliate.. This differs from Exhibit 56, which was the estimated construction cost of pipe line systems filed by Mr. George Phillips?

A That is correct.

Q I submit this statement, sir, as an exhibit.

STATEMENT OF ESTIMATED  
CONSTRUCTION COST OF NATURAL  
GAS PIPE LINE SYSTEM WEST-  
COAST TRANSMISSION COMPANY  
LIMITED, WESTCOAST TRANS-  
MISSION COMPANY Ltd., AND  
UNITED STATES AFFILIATE  
MARKED EXHIBIT 93.

Q Now, would you just state the difference between this exhibit and Exhibit 66?

A Briefly, the only difference between Exhibit 93 and Exhibit 66 is that duties and Dominion sales taxes have



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Dir. Exam. by Mr. McDonald.

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been deleted. I refer you to Statement 1, page 1 of 2, and you will note under the Westcoast Transmission Company Ltd., estimated construction costs, natural gas gathering and distribution system in Alberta, under pipe material, items B, duty, and C, Dominion sales tax, reflect no moneys. The same holds true throughout this exhibit for any materials that would be subject to duty or Dominion sales taxes. The net effect being a reduction of some \$1,400,000.00 in the estimated cost of construction of the gathering system. In the instance of the pipe line system from Edmonton to Vancouver, a net reduction in construction costs of some \$5,000,000.00, and obviously the U.S. affiliate remains the same.

Q Now, Mr. Poor, at the last Enquiry you were asked certain information relative to Exhibit 67, which was the estimated transportation costs for natural gas Westcoast Transmission Company Limited and associates. Exhibit 67 was an exhibit based on Exhibit 66. The cost is set out in Exhibit 66?

A That is correct.

Q So this is a composite exhibit dealing with estimated transportation costs on Mcf. basis. I should ask that it be marked.

TABLE OF ESTIMATED TRANSPORTATION COSTS ON Mcf. BASIS MARKED EXHIBIT 94.

Q One of the questions asked was the estimated transportation costs for the fifth year of operation as contrasted to the average year which was set out in Exhibit 67. Now, the first statement on Exhibit 94 deals with that item. Would you refer to it?







W. B. Poor,  
Dir. Exam. by Mr. McDonald.

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A Statement A, the fifth full year of operation of Westcoast Transmission Company Limited and natural gas affiliates is identical with the Statement A, Exhibit 67, with the exception that in Statement A there is reflected the average of the first five years of operation with a constant transportation cost of 23.3 cents, the average rate base being \$61,020,000.00 as opposed to an average rate base of \$64,981,000.00 in the fifth year of operation, or a rate of return in the fifth year of 10.42% instead of 9.08 for the average of the five year period, and on the total investment a rate of return in the fifth year of 9.2% as opposed to an average rate of return for the five year period of 8.32%.

Q THE CHAIRMAN: What is your average investment for the five years in Exhibit 67?

A \$66,624,000.00.

Q MR. McDONALD: The average investment?

A The average investment for the five years, as opposed to a total investment in the fifth year of \$73,635,000.00. With respect to the International border to U.S. markets --

Q THE CHAIRMAN: Just a minute. That \$66,024,000.00 was the average rate base, or the average investment?

A That was the average investment.

Q Your \$64,981,000.00 is on a rate base and after depreciation?

A That is correct, in the fifth year.

Q In the fifth year, your \$66,624,000.00 is the total investment?

A That is correct.







W. B. Poor,  
Dir. Exam. by Mr. McDonald.

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Q So those two figures are not really comparable?

A No. The comparable figures are \$61,020,000.00, being the average rate base for the first five years, as opposed to \$64,981,000.00 being the rate base of the fifth year. With respect to that operation of the line from the International border to the U.S. markets, the average rate base for the first five years is \$17,452,000.00 as opposed to a fifth year rate base of \$16,990,000.00, with an average rate of return for the first five years of 5.9% and 7.55% in the fifth year, with an average investment for the first five years of \$18,831,000.00 as opposed to the investment in the fifth year of \$19,497,000.00, with an average rate of return for the first five years of 5.49% and for the fifth year rate of return of 6.6%.

(Go to page 1354)







Wm. B. Poor,  
Dir.Ex.by Mr. McDonald.

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Q Then would you deal with the statement for the gathering system in Alberta?

A Statement "A" for the 5th year for the gathering system, Exhibit 94, as compared to Statement "B", being the average of the first five years of operations as set forth in Exhibit 67, reflects an average rate base for the first five years of \$19,638,000.00 as opposed to a 5th year rate base of \$18,978,000.00, with the average rate of return for the first five years being 7.2%, and for the 5th year of operation, 9.7%. The average investment for the first five years is \$21,184,000.00, with an average rate of return on the average investment of 6.8%, the estimated investment for the 5th year being \$21,800,000.00, with a return in the 5th year of 8.5%.

Q Then, Mr. Poor, you have prepared a similar statement for the 5th year for the three systems based on the costs which you have set out in Exhibit 93?

A That is correct.

Q That is, the costs less the taxes and duties?

A That is correct.

Q Now, you have a statement "AA" (5th year), Statement "BB" (5th year), and Statement "AA" (Average). Possibly you should deal with Statement "AA" (Average), which is the last statement, first.

A Statement "AA" (Average).....

Q This is a comparable statement, Mr. Poor, to Exhibit 67?

A That is correct, with the exception that this statement reflects the effect of deleting duties and Dominion taxes.

Q The differences are that transportation cost in Statement "AA" (Average) is 21.3 cents as contrasted to transportation







Wm. B. Poor,  
Dir.Ex.by Mr. McDonald.

- 1355 -

cost of 23.3 cents in Exhibit 67 as applied to Canadian markets?

A That is correct. And under transportation cost the only items that I changed are Item 9, Depreciation; Item 11, Income Taxes; and Item 12, Operating Income, resulting in a reduction in the total transportation cost of approximately \$1,000,000.00.

Q Now, would you make a similar comparison for International Border to U.S. markets?

A International Border to U.S. Markets remains the same in Exhibit 94 as it does in Exhibit 67.

Q That is right. Now, Statement "BB" (Average)?

A Statement "BB" reflects the effect on the cost of gathering when deleting duties and Dominion taxes with a reduction in total gathering costs from \$3,029,000.00 to \$2,335,000.00, or somewhere less than \$200,000.00, reflecting a reduction in the gathering costs per Mcf. of 5.9 cents to 5.5 cents.

Q Then you have in Statement "AA" (5th Year) and Statement "BB" (5th Year) the 5th year calculations on the basis of the costs in Exhibit 93?

A That is correct.

Q Would you compare those to the average, Mr. Poor?

A Do you want them compared to the average?

Q Yes, just as to transportation costs. The transportation cost in the 5th year for Edmonton to Canadian markets is 20.1 cents as contrasted to the average of 21.3 cents. The figures for the rate base and investment are set out in the exhibit?

A That is correct.

Q And the Statement "BB", the average gathering cost for





Wm. B. Poor,  
Dir. Ex.by Mr. McDonald

- 1356 -

the five years is 5.6 cents as contrasted to 5.5 cents -  
pardon me...

A No, it was computed out as being in one instance 5.6 and  
the other as 5.5. Now, I might point out that in the one  
instance the third significant figure was not taken into  
account. Now, those should be identically the same. If  
they had been carried out to two decimal places, the  
answer would be the same in both cases.

Q THE CHAIRMAN: Mr. Poor, on this statement "AA"  
(5th year), I understood from you or Mr. McDonald to start  
with, that there was no change from the International  
Border to U.S. markets. Those figures do appear to be  
changed, and the cost is now changed from 6.4 to 6.3.  
There are additional sales to U.S. markets.

Q That is a comparison between the 5th year of operation and  
the first five years of operation?

MR. McDONALD: Yes, that is right.

A If we compare the statements showing the average.

Q THE CHAIRMAN: I see.

A Of the 5th year, the International Border to U. S. markets  
would remain the same.

Q Yes, I see.

Q MR. McDONALD: Now, Mr. Poor, there was a reference  
made on your examination at the last sittings to the question  
of dividing operation and maintenance as between the items  
operation, as such, and maintenance, as such. Have you  
any figures or estimates you can give us in regard to that  
possible division?

A Yes, I have. After reviewing the operating statements of  
operating systems similar to that contemplated here, it is





Wm. B. Poor,  
Dir. Ex. by Mr. McDonald

- 1357 -

my conclusion that the breakdown between operation and maintenance percentagewise for compressor stations would be 70% operations and 30% to maintenance. With respect to pipe lines, 60% to operation, 40% to maintenance; with respect to dehydration plants, 80% to operation, 20% to maintenance; and with respect to measuring and regulating stations, 90% to operation and 10% to maintenance.

Q I think you might answer other counsel, Mr. Poor.

THE CHAIRMAN: Mr. McDonald, this statement shows "Edmonton to Canadian markets", which is rather misleading. That should be Edmonton to International boundary. I thought we agreed to change the previous exhibit. In other words, the deliveries to the Canadian market are not 60,000,000.

MR. McDONALD: Oh, yes, I appreciate that. I regret, sir, I entirely missed that. It should be Edmonton to International boundary. The Canadian markets only take quite a bit less than that.. The Edmonton to Canadian markets takes 60,000,000 less 47,000,000 in the next column.

THE CHAIRMAN: I think in one of those exhibits you mentioned the cost Edmonton to Vancouver. Would you say the cost to Vancouver would be the same as to the International boundary?

A That is correct.

MR. C. E. SMITH: I wonder if we might ask, are you going to change the headings of the columns throughout this statement there of "Edmonton to Canadian markets"? It should be "Edmonton to International Border".

MR. McDONALD: Yes, it should be "Edmonton to International Border".

MR. C. E. SMITH: I had in mind it was Huntingdon.





Wm. B. Poor,  
Cr. Ex. by Mr. Fenerty.

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I suppose that is the same place?

MR. McDONALD: Yes, that is the same place. I  
am sorry, sir, I missed that entirely.

.....

CROSS-EXAMINATION BY MR. FENERTY:

Q Mr. Poor, I note that you made your calculation on the  
basis of load factors from 58% up to 100%, and my under-  
standing is that 100% would be an ideal load factor if you  
could reach it?

A That is right.

Q Yes. The companies do strive to get as high a load  
factor as possible by the off-peak sales, interruptible  
loads and so on?

A That is right. Any means at hand that is reasonable.

Q And you have to count on the possibility of a really suc-  
cessful operation having a load factor close to 100%,  
although it would be difficult to reach it?

A It would be difficult to reach it.

Q Yes. And now my understanding from looking at this is  
that assuming for the moment that local consumption in  
Southern Alberta is tied into this system, it would have  
to be, the last two items, speaking now of the last compu-  
tation, the gathering costs and costs of gas, those would  
be the items which would affect local use of gas, wouldn't  
they?

A I don't know that the gathering costs would particularly  
affect local conditions. It might. Of course, the cost  
of gas will have a direct bearing because it in all probab-  
ility would be on a competitive purchase basis.





Wm. B. Poor,  
Cr. Ex. by Mr. Fenerty

- 1359 -

Q Let us say the market is divided whereby gas for local consumption, and for that I am talking about Southern Alberta, because we seem to have Northern Alberta pretty well protected on all four sides, let us talk about Southern Alberta, and suppose it is tied into this system and there are no price differentials, they would be faced with those two sets of costs, gathering costs and the costs of gas, wouldn't they?

A No, I don't know that that condition would prevail at all.

Q If it did prevail, and assume for a moment they are a factor in those costs?

A Well, if it did, it would.

Q What is that?

A I say if it did prevail it would prevail, that is all.

Q I have an idea that somebody is going to try to make it prevail before we are through, and I want to find out what the consequences are. It would follow from that that the Canadian Western Company tied into that system would face a possibility of 19.5 cents plus some transportation costs at its gate, wouldn't it? That is the total of 6 and 13.5, that is your highest figure?

A Yes.

Q I do not suppose you know a thing about its present costs?

A No.

Q That is not your end?

A It was not the purpose of this exhibit to do other than to show the effect of load factor on some comparable basis. I might just as well have started off and set the transportation costs of gas at 58% load factor as 10 cents or 50 cents.





Wm. B. Poor,  
Cr. Ex. by Mr. Fenerty

- 1360 -

Q Yes. I will tell you what I am worrying about, so that you will see the reason I am asking the question.

A Yes.

Q I am worrying about the present costs of  $11\frac{3}{4}$  cents at the gate as against the possible cost of 19.5 cents plus some part of transportation costs? You, fortunately, do not have to worry about that?

A No, but on the other hand, Mr. Fenerty, I do not see where from the wildest imagination you can feel that anything in this statement, taking your figures of 19.5 cents, should be a reality.

Q Should what?

A Should become a reality.

Q Well, because it wouldn't be 100%, take it down the middle, if you like, take 70%?

A No, it is more than that. All I am trying to do is to make the point that I have tried to show here. I have shown the two extremes.

Q Yes?

A As to who might get the benefit.

Q Yes?

A Now, obviously, it is not going to be good business, that is, the highest load factor, to give the benefit of that load factor to one group. All I ask you to do is not to take the worst picture. We have drawn two groups of lines. That is what this amounts to. It could be graphed.

Q Yes?

A Something in between those two would be a reasonable adjustment.

Q I don't get it, I don't get it. I think we have a picture here complete already, and very good evidence, which I do





Wm. B. Poor  
Cr. Ex.by Mr. Fenerty.

- 1361 -

not think can be altered, that on the basis of proven area, we have a substantial shortage of gas for a period of 30 years for the Southern Alberta system and export, that is my reading of the evidence, and I surmise that engineers are under the impression that there is no way that can be rectified on the present basis of proven areas without some system of integrated lines throughout the Province taking the gas to the South from the North, and back again, and to me at least, that indicates that this system of yours, if put into operation, is going to be tied up with integrated lines, and that we will be getting our gas from that integrated system. I say to you, is that not right? And assuming all that, which is quite a mouthful....

A It is quite a bit of a mouthful.

Q Well, if you do not assume it, you see, I think the inquiry should end here, because we are 500 billion short, and that is the reason that I am asking you to assume it, because we do not want to end here, do we?

A O.K.

Q So that try to make the assumption, because it may help your clients if you do that, then I say to you we have to face the possibility of cost to the Canadian Western of anywhere slightly above present costs to something over double, isn't that sound?

A No, I do not follow that at all. I do not follow that at all.

Q I cannot always follow engineers because I am a layman in that respect, so that I will leave it. You are not in a position then to tell us what might be the possible costs?

A No. All I can say is that I pointed out here that as the load factor increases, your transportation cost of gas is





Wm. B. Poor,  
Cr. Ex.by Mr. Fenerty

- 1362 -

going to decrease. Now, that decreasing cost of transportation may be reflected, and I have reflected it here on two extremes, one the effect on the ultimate market if you gave the entire decrease in cost to the consumer, and in the second instance I have reflected what the effect would be on a producer if you gave all of the benefits of the decreased transportation costs to the producer.

Q Yes?

A Now, at some point inbetween .....

Q Yes?

A As that load factor increases there is going to be the economic thing to do.

(Go to page 1363)





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W. B. Poor,  
Cross-Ex. by Mr. Fenerty.  
" " by Mr. Nolan.

- 1363 -

Q So I won't waste time can you tell me is there any engineer in your organization who is here and will be prepared to discuss the effect of any cost as well as supplies to local consumption on this export proposition?

A I cannot answer that question.

Q You do not know?

A I do not know.

Q Perhaps I should have asked my friend Mr. McDonald. Thank you.

CROSS-EXAMINATION BY MR NOLAN:

Q Mr. Poor, there were just one or two things I wish you would be good enough to tell me for my information. Turning your attention to Exhibit No. 93, I notice that there is nothing, set opposite the items for duty, Dominion Sales Tax or Provincial Sales Tax. Looking particularly at Statement No. 2 in Exhibit 93. My point was this, why were they deleted from the statement?

A Because I was so requested to prepare this comparative exhibit and that is all I know.

Q You were requested to prepare the exhibit without these items in it?

A That is right.

Q Was that requested by the Board or by counsel?

A I was requested by counsel.

Q Your own counsel?

A Yes.

MR. McDONALD: Oh, yes.

Q MR. NOLAN: What I could not understand, Mr. Poor, is why leave these out? Does not that reflect an untrue picture?

A I do not know.





W. B. Poor,  
Cross-Ex. by Mr. Nolan.

- 1364 -

Q You do not know. You do know there is duty to be paid on imports into this country?

MR. McDONALD: We have filed Exhibit 66, which includes those items and we have prepared Exhibit 93 which deletes them, and that is all there is to it. If these materials were manufactured in Canada and obtained in Canada there would be no duty, and as to the Dominion and Provincial Sales Tax, that is a matter of negotiation. We wish to have this statement on record and we have put it on the record.

Q MR. NOLAN: And would you not agree with me that it is of no use?

A I do not know whether I agree or not, because I do not know what point you are trying to make.

Q What I want to point out is this, that if you exclude those items it does not give a true picture of the situation?

A I do not know.

Q Well I will not pursue that any further. In your Exhibit 94 there is a column headed, "Estimated Transmission Cost for Natural Gas, Edmonton to Canadian Markets." Does that mean to the International Boundary? From Edmonton to the International Boundary?

A That is correct.

Q And what would be the additional cost from that point at or near the International Boundary to the City of Vancouver?

A No transportation cost. I believe I am correct in saying that these costs include the cost of the transmission system in Canada and related to deliveries to points both in Canada and the U. S. markets.

Q And that cost from the boundary to Vancouver is included?

A That is correct.





W. B. Poor,  
Cross-exam. by Mr. Nolan.

- 1365 -

Q That is what I wanted to find out. Now, would you refer to Statement "A", which is a statement showing the estimated gathering costs for natural gas in the fifth year of operation, and I see that your gathering costs per Mcf. is 5.9 cents?

A That is correct.

Q And on your next statement you show as the transportation cost, Edmonton to Canadian markets, 20.1 cents and International Border to U. S. markets, 6.3 cents. Now that is the fifth year of operation. But what about the first year?

A The cost of transportation could remain constant over the whole period. The rate of return in the earlier years might be smaller.

Q You would be more interested in building up the business and trying to get customers?

A Surely.

Q Now turning to Exhibit 92, which is the effect of load factor on price to producer and price to consumer, you have the operation cost, 4,476,000 and then income tax and return 7,800,000, and there is a footnote, "I" is 12% of which 3.5% is taxes."

A That is right.

Q And those are income taxes and Provincial taxes, sales taxes and the percentage to the gross investment, that is merely your calculation?

A That is correct. Instead of making over an operating submission which is rather tedious, working out the income taxes, and as the gross revenue increases due to load factor - -

Q I understand that. Then again turning to Exhibit 92, these costs - if I may call them that - that appear under the





W. B. Poor,  
Cross-ex. by Mr. Nolan.

- 1366 -

various load factors, are they the costs at Vancouver?

A I think that is correct, yes, sir.

Q And there is a difference in costs between Vancouver and the cities across the border?

A Surely.

Q And what was the differential, or whatever you call it, that you gave in evidence before, Mr. Poor? My memory is it was 6.4%?

A 6.4 cents.

Q 6.4 cents. I beg pardon. It was 35.6 cents in Washington plus the cost of the gas, that is right, is it not?

A I think that is correct.

Q And 29.2 cents plus the price of gas in Vancouver, making a differential of 6.4 cents?

A I think that is right.

Q My only point is that you are considering a two-price structure, one price in British Columbia and another price in Washington?

A Certainly.

Q And insofar as the cost of the gas itself is concerned, as set out in Exhibit 92, you have here a figure of 5 cents?

A That is right.

Q Did I understand you to say that was an arbitrary figure?

A Yes. It just sounded like a good figure. I do not know whether it would be  $4\frac{1}{2}$  cents or 7 cents, but in order to make a mathematical calculation I just used the 5 cents.

Q Do you know what the field price of gas is?

A I do not.

Q It is just a figure that you used for the purpose of your calculations?

A Figure for the purpose of these calculations, yes.



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Q During the course of the evidence on behalf of your client there is no reference to any price to be paid to the producer of the gas, is there?

A That is correct.

Q All you are doing here is to pick out of the air - and I do not mean it impertinently - you just take a figure of 5 cents and use that for the purpose of preparing your evidence?

A That is correct. I just used a figure instead of dealing in percentages and percentages of percentages.

Q That is your own figure, that 5 cents?

A Yes.

Q Or was it suggested to you?

A No, sir, it was not suggested to me.

Q BY MR. FENERTY: I do not know, Mr. Poor, if you are aware that before the Dinning Commission different submissions were filed which, if my recollection is right, provided for a price as high as over 18 cents at the well head?

A No, I did not know that.

Q If you had known of these things being discussed, would you have gone higher?

A No, I do not believe I would. I do not believe in selling gas at the well head for 18 cents.

Q BY THE CHAIRMAN: In this statement "A" of Exhibit 94, in the fifth year of operation as shown here, is that a representative year?

A I cannot say, Mr. McKinnon, whether it would be a representative year or not. I took it purely on the picture as represented by the others it would be, and resolved it back to the entire operating system on the return.

Q I notice your rate of return is 10.42 as against 8.5, which





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I think you mentioned before. Is this made up to average that out?

A That is correct.

Q We would consider that as a representative year?

A I would be disposed to say it is on the heavy side. In answering your question I would say that if by the fifth year this earning had produced anything approaching  $8\frac{1}{2}\%$  return for the five year average, then very definitely a rate reduction would be in order.

Q On Exhibit 92 you show here a 58% load factor and you show a transportation cost of 20.3. Now are the costs here 12.276, is that the basis of your statement Exhibit 67, that is without the deduction of the sales tax? I think it corresponds pretty well with 67?

A 67.

Q I mean it is the basis of the costs of Exhibit 67. That is, your statement "A" here is the basis of Exhibit 67?

MR. McDONALD: Yes, that has reference to Exhibit 67.

Q THE CHAIRMAN: And is the basis of Exhibit 67.

That is the cost here, I think, is based on 94, statement "A". It is a bit complicated.

A I must confess, Mr. McKinnon, that I do not recall exactly where I got this figure 12.276 as being the operation and return based on the fifth year's operation.

Q I think it is based on the figures in Statement "A" of Exhibit 94. What I was getting at, Mr. Poor, is if you take the transportation cost in the fifth year on Statement "A" in Exhibit 94, which is 23.3 cents. Now I understand the estimated load factor in the fifth year would be 58% and on Exhibit 92 it is 20.3 cents.





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A I think I can answer that. In the fifth year of operation, I am referring to statement "A" of Exhibit 94, we show a rate of return of 10.4 on the rate base or 9.2 on the investment. Whereas, in this calculation, using the reflected effect of the load factor, I have assumed the same operating costs and in that calculation in the upper right-hand corner I just assume a rate of return of 8.5%, which reduces the transportation cost of the gas in the beginning from 23.3 to 20.3.

Q So that your operation cost is 24.76 rather than this cost in Statement "A", deducting income taxes and so on, when earning a rate of  $8\frac{1}{2}\%$  ?

A That is right.

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Q Well, that is why I was asking you if you considered this fifth year operation to be a representative year or would we take it as 92 being the representative year, I mean, your costs in Exhibit 92?

A Again I would be disposed to say this, that if the fifth year did produce a revenue, or I might better say, if in the fifth year your deliveries amounted to 60 billion and the operating costs approached those estimated herein, that it would be a representative year insofar as our thinking is at this time and a rate reduction would be in order.

Q All right.

MR. C.E. SMITH: I have nothing at this time, if you are looking at me, sir. I do not know whether Mr. Poor will be back again or not. It is a little difficult to receive a whole sheaf of papers here in the morning and try to ask him anything about it. I am not asking anything. If anybody wants something that they understand, they can do that. I can not digest all this here.

Q DR. GOVIER: Mr. Poor, I wonder if you would tell me why you have assumed a different rate of return on different portions of the line even at the same time. For example, in Statement A of Exhibit 94 for the Canadian portion of the line the rate of return on the investment is 9.2%, for the U.S. portion 6.6% and for the gathering lines in the Province of Alberta it is 8.5%. Why are those figures so different?





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MR. McDONALD: Maybe, Mr. Chairman, I should answer that question. I think the question of rate of return is a matter of policy of the company and Mr. Poor, I think, used his calculations according to instructions. The prevailing rate of return in the United States is roughly 6%, the prevailing rate of return in Alberta is roughly 7.5%, and the rate of return on the main line transmission system has not yet been fixed by any regulatory body, and that has been a basis used at 8.5%. These figures vary in the Exhibit A in the fifth year but the basic approach was on that basis, so the net result will be in the variations that are shown in the exhibit.

Q DR. GOVIER: Another thing, Mr. Poor. Your statement reflects a load factor of approximately 58% as being reached in the fifth year, and I believe a previous submission dealing with deliverability indicated that that load factor would be maintained, or supposed that that load factor would be maintained for the second, third, fourth and fifth year intervals. In other words, on the deliverability statement it suggests that the 58% load factor is saturation load factor for the system. On the other hand, the 58% load factor, I understand, is a very low load factor for economic transmission. I wonder if you would care to make any comment and expand on that.

A Well, I think that about all I can do at this time is to reiterate that which I said in my former appearance here, that it is my personal opinion that the estimates of 58% load factor are approaching the pessimistic. I think





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every effort has been made to produce estimates that are on a conservative side, having in mind that it is the purpose herein to give testimony that is not in any manner Pollyannaish.

Q I appreciate that point, Mr. Poor, but on the other hand I think there are two ways of looking at this conservative approach so-called. It is certainly conservative from the point of view of return on investment and cost of gas to the ultimate consumer to assume the worst picture from the point of view of load factor.

A Possibly what you are trying to ascertain is to what extent the load factor may be pessimistic to the end that you determine what effect it would have on deliverability.

Q That is it exactly. It seems to me that from the evidence submitted, 58% is a low load factor to expect the system to operate on for 30 years. If that is correct perhaps we should revise our figures slightly on the deliverability side of the picture.

A You may have a point there.

Q Would you care to suggest for our advantage, Mr. Poor, any other figures that might represent a better estimate of saturation load factor?

A No, I would hesitate to do that because I have made no study of the market personally and am not acquainted in any intimacy with the Vancouver or West Coast markets, but I do feel, and I reiterate that statement, I do feel that the market surveys from the point of saturation is on a conservative side based on my experience in the gas business and what I have seen transpire, particularly in



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the last four or five years.

Q Would you feel that way about the estimate for the fifth year of operation?

A Yes, I think I would.

Q And you would expect a growth between the fifth and say the tenth year of operation, would you?

A I would expect some growth, but I would expect my load factor to be materially higher than 58% at the fifth year.

Q And then to increase perhaps more slowly over the remaining years?

A That is correct.

Q Is there anyone here in your company, Mr. Poor, that could give us further assistance in this matter?

A I do not think there is, but I am not --

Q Could you suggest anything, Mr. McDonald?

MR. McDONALD: I just wanted to be clear on what you have in mind, Dr. Govier. Did you wish to approach it from the problem of saying that in the fifth year we would have 65% load factor rather than a 58%?

DR. GOVIER: Well, I am not suggesting an alternative number at all, Mr. McDonald. I am simply suggesting this, that every time we discuss costs it seems that we all take the attitude that 58% is a conservative number, a conservative estimate. On the other hand, when we discuss deliverability we seem to be forgetting that. Now, I think we should integrate the two and be sure that when we are considering deliverabilities we are considering numbers that are realistic from the





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cost point of view also.

MR. McDONALD: Well, in looking at the overall presentation to the Board I felt that we had to arrive at a basis on which to make the presentation which was related first to markets, which gives you the 58%, then we designed our line to supply that. Then we make the presentation to the Board in regard to deliverability on the same estimate.

DR. GOVIER: Now it appears 58% load factor may be unreasonably low for economic operation of the system for 30 years. If it is, then the deliverability data should be adjusted accordingly, surely.

MR. McDONALD: Yes, but in order to arrive at a basis for presentation and discussion we are presenting and will present today deliverability on the basis of 58%, that is, the 60 billion. That is the basis of our application to the Board for our annual requirements in the fifth year, and that is the amount of gas that would be authorized by the permit if, as and when it is issued to this Company. Now then, if there is going to be any change in the matter of load factor, then we are also going to have to have a change in the basis of the permit under which we are operating. We would have to go to the Board and say we want another 10 or 15 or 20 or 25 million per year. We would have to submit our deliverability program on which we would obtain that gas, and that would affect everybody else interested. Now, on the other hand, it could be approached in the manner suggested by yourself.





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DR. GOVIER: Well, I think the Board would like to know at the outset how much gas will be required to permit an economic operation.

MR. McDONALD: Well, of course, we are submitting that the presentation we are submitting is an economic operation insofar as our line is concerned, and any improvement in the economic situation will in effect be a benefit to either the consumer or the producer because the utility itself is more or less restricted in its earnings, and it is providing a service both to the producer and the consumer and if that service improves in any respect a benefit will accrue to the other parties. We feel we are making an economic submission here.

DR. GOVIER: Possibly we might consider it again after the deliverability statement is made.

MR. McDONALD: All right. I can say that the deliverability picture as presented will be based entirely on the 60 billion sales, as previously submitted in the market analysis. Any change in that deliverability will of necessity mean a change and an entire redrawing of the deliverability, the pattern that we are now submitting. We are pioneering to some extent and I think the statement you have made, we can consider it and meet it, I think, in subsequent submissions.

DR. GOVIER: Fine. Thank you.

MR. C.E. SMITH: Can you pioneer a deliverability statement by letting us all have it five minutes before 9:30 rather than at 9:30?

MR. McDONALD: I will let you have it if it is



W. B. Poor,  
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here.

MR. C.E. SMITH: I wonder, might I ask Mr. Poor just one question along the line Dr. Govier has been speaking about.

Q You remember to some extent the question of rate was discussed with you before and the percentages of 40%, if you agree, my recollection was you said that was no good, no company could continue in business, 50 you were exceedingly doubtful from your experience, and that probably between 55 and 60 a company might get along and continue operations.

A THE WITNESS: Companies have got along on that. They don't like it though.

Q I think you said you would expect, purely as a matter of opinion, with respect to Westcoast, that the 58 would rise to 70 or 75?

A That is correct.

Q You said that before?

A I did say that, yes, sir.

Q You do not want to alter that, I take it, Mr. Poor?

A No.

Q That is fine.

Q MR. NOLAN: I just want to ask Mr. Poor, if I might, please, this figure of 60,638, 60 billion cubic feet of a load factor of 50%, that was based on the marketing figures that were put in here during the course of the testimony?

A Yes, sir.





W. B. Poor,  
Cr. Exam. by Mr. Nolan.  
R. S. Woodford,  
Dir. Exam. by Mr. Frere.

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Q I mean, it is geared to those figures?

A It is.

THE CHAIRMAN: I think we might adjourn now.

(The Hearing then took a short adjournment.)

MR. McDONALD: Mr. Chairman, Mr. Frere has indicated that he is prepared to submit the statement of the Consolidated Mining & Smelting Company Limited. I think it would be in order to do it now so that Mr. Frere can return to Trail tonight.

MR. FRERE: I would like to call Mr. Woodford, Mr. Chairman.

RAYMOND SVEN WOODFORD, having been first duly sworn, examined by Mr. Frere, testified as follows:

Q What is your position with the Consolidated Mining & Smelting Company, Mr. Woodford?

A I am the general superintendent of the Alberta Nitrogen Department of our company.

Q At its Calgary plant?

A At its Calgary plant.

Q And you are in charge of that plant?

A That is correct, yes.

Q How long have you held that position?

A Since January, 1949.

Q How do you describe yourself, Mr. Woodford? That is, what are your professional qualifications?





R. S. Woodford,  
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A I am registered as a professional engineer under the laws of the Province.

Q Of Alberta?

A Of Alberta.

Q Will you describe briefly where the plant is located in relation to the City of Calgary?

A It is located south of the main part of the City of Calgary and approximately 4 miles by road from the City limits, from the southern city limits, approximately 2 miles south of the Macleod Trail from the city limits where they intersect the Macleod Trail, and then a mile and three-quarters east from that road.

Q What products are manufactured at the plant?

A We manufacture anhydrous ammonia and ammonium nitrate.

Q And natural gas is used in the manufacture of those products?

A Yes, it is.

Q I believe you have prepared a statement with regard to consumption of natural gas at the plant?

A Yes, I have.

Q Would you read that statement into the record, Mr. Woodford?

STATEMENT OF CONSOLIDATED  
MINING & SMELTING COMPANY  
OF CANADA LIMITED RE  
CONSUMPTION OF NATURAL GAS  
MARKED EXHIBIT 95.

A The natural gas consumption in 1949 of the Calgary Plant of The Consolidated Mining and Smelting Company of Canada, Limited, (commonly referred to as the Nitrogen Plant or the  $\text{NH}_3$  Plant) amounted to 3,578,650 MCF. accord-



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ing to the billings of the Canadian Western Natural Gas Company Limited. This corresponds to an average daily consumption of 9,805 M.C.F. and represents 17.19% of the total gas sales of that Company for 1949, and 38.75% of their industrial sales for the same year.

This consumption is reasonably indicative of full scale operation of the plant, although operation was curtailed during February of that year because of a shortage of power.

The Company has no plans for curtailing operation of the plant and it is reasonable to assume that gas consumption at the plant will continue in the future at present levels, unless there should be a complete collapse of the export market for our product. This we do not anticipate.

No expansion of the plant is actively planned at the present time, but our Company, through its Research Department, is constantly investigating new processes and products that might lead to the expansion of our operations.

The possibility of increased gas consumption at our plant at some time in the future should therefore not be discounted.

Q You use the natural gas as a raw material in the manufacture of ammonia, do you not?

A Yes, we do.

Q And is there any substitute for natural gas in your process of manufacture?

A Not in the existing process, no.

Q So that if the quantity of gas that you use is decreased





R. S. Woodford,  
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your production would likewise be decreased?

A That is true, unless very extensive alterations were made to the process.

Q And if your production is decreased for any extended period of time, would you have to decrease the number of the employees which you have on your payroll?

A Yes, we would.

Q So that a full constant supply of gas is necessary for your operations?

A That is right.

CROSS-EXAMINATION BY MR. FENERTY.

Q Just a question or two.

A All right.

Q My understanding is that this plant we are discussing had its inception under National Defence policies, I think, in time of war or just previous to the war?

A That is right, yes.

Q And performed a very important unit in national defence policy?

A That I do not know, sir.

Q In war time it was in connection with the manufacture of ammonia?

A That is right, yes. What I mean is, I do not know what the national defence policy is and I am not qualified to make any statement in that regard.

Q Oh well, you are not alone in that. Thank you.





R. S. Woodford,  
Cr. Exam. by Mr. C.E. Smith.

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CROSS-EXAMINATION BY MR. C.E. SMITH.

Q Mr. Woodford, could you tell us anything about your Trail plant and the possibility of it using natural gas if, as and when the proper price might be available to you?

A I could give you some information that was given previously to the Dinning Commission. I have the transcript here. What information would you like to have, Mr. Smith?

Q To begin with, would your company like to have it there? That is plain layman's language.

A I have no doubt if it could be offered at an attractive price we would be glad to have it.

Q It is something that could be used there to a large extent?

A It could be used, yes.

Q Can you give us an approximation of about how much you could use out there if you got it, as you call it, at an attractive price?

A If you will bear with me for a moment I will have that for you. We estimated last year that if the fuels used in our plant there which can be fairly readily replaced by natural gas were so replaced we would need something on the order of 3,000 million cubic feet per year, with a further possibility of an eventual consumption of 5,000 million cubic feet per year.

Q That estimate was made on your last year's figures?

A That was given to the Dinning Commission.

Q And it was based, I take it, on 1948, was it?

A Yes, I would think that it would be.

Q Yes, that is all.



R. S. Woodford,  
Exam. by Mr. G.W. Govier.

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EXAMINATION BY DR. G. W. GOVIER.

Q Mr. Woodford, I have one or two questions I would like to ask. Your company recently applied for and obtained a permit to use natural gas for purposes other than for the generation of heat, light and power and so on?

A That is right.

Q And I believe a copy of that permit was submitted as an exhibit. I was just looking for the exhibit number but I do not see it.

MR. C.E. SMITH: It is in, I put it in.

MR. McDONALD: I will give you the number.

It is Alberta Gazette of December 1st, 1949, Exhibit 47.

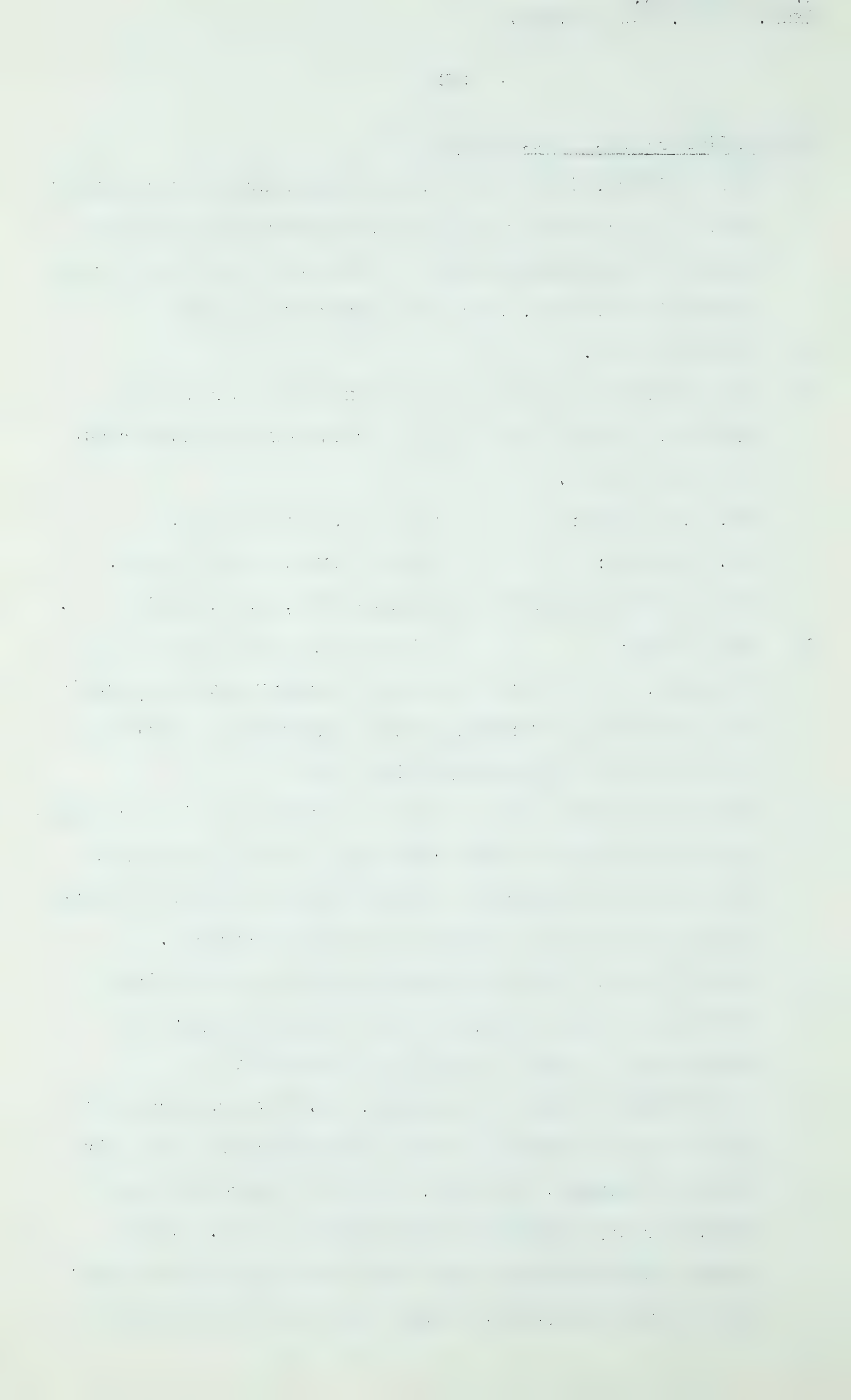
Q DR. GOVIER: I believe in that permit, Mr. Woodford, it is stated that your company might entertain the possibility of making other compounds in addition to those which are presently being made?

A That is correct. That is what I referred to in our statement when I said we were constantly investigating new processes and products. The reason we do that, we think we may go into the production of those products.

Q Could you give the Board any lead as to the possible increase in gas consumption that might accompany the manufacture of some of these new products?

A I am afraid I could not do that, Dr. Govier, because we have no plans advanced to the stage where we could give such an estimate. In fact, we have no very definite plans for any expansion at the present time. We are merely indicating here that that does not mean we never will expand the plant, we just have not any plans for





R. S. Woodford,  
Exam. by Dr. G.W. Govier.  
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the present time.

Q Then I imagine all the Board can do is supply a reasonable growth factor, so to speak, to your present requirements in order to take care of the possible future needs?

A We could not give any estimate of our needs. I assume that is all that could be done at the present time.

Q Thanks, Mr. Woodford.

CROSS-EXAMINATION BY MR. NOLAN.

Q I was going to ask you, if I may, Mr. Woodford, in the manufacture of these products to which Dr. Govier has just made reference, what would you use in respect of the manufacture, would you use natural gas or propane or butane?

A You mean, what is the constituent in the natural gas we would use?

Q Yes.

A We could use all those. The main constituent of the natural gas in this province is methane. That is mostly used but the other products can be used.

Q Do I understand you might use them all, or you would use them all?

A We would use those that are present in the gas supplied to us.

Q Thank you.

THE CHAIRMAN:

Thanks, Mr. Woodford.





R. S. Woodford,  
Cr. Exam. by Mr. McDonald.

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CROSS-EXAMINATION BY MR. McDONALD.

Q Just one thought, Mr. Woodford. Your contract with the gas company is on an interruptible basis, I understand, or is it not?

A We have been interrupted in the past.

Q You have been interrupted?

A Yes.

Q Could you recollect how many days during say from the 1st of January to date you were on a short supply basis?

A During this year?

Q During this year.

A We have been on a short consumption basis but not by reason of any inability on the part of the gas company to supply, but we have had power troubles so that we are not able to use our normal amount of gas.

Q Well, we had a peak day exhibit submitted by the gas company, I think it is Exhibit 65. It showed a consumption of a peak day demand of 132 million feet. I was wondering, and I think the date is January 30th, could you tell me if your plant was in short supply on that day or not?

A It was not.

Q Were you operating at 9 million cubic feet that day?

A In round figures, yes, our normal consumption.

Q Normal consumption, yes. Now, there is something else that would have an effect on whether you would operate your plant or not, and that, of course, is the price of gas as a raw product?

A Yes.



R. S. Woodford,  
Cr. Exam. by Mr. McDonald.

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Q If the price went up to an uneconomical level it would be just as effective as shutting off your supply?

A Yes.

Q So that you are concerned not only in the matter of supply but also the matter of price?

A Yes.

MR. C.E. SMITH: Who is not?

Q MR. McDONALD: I just thought I would help Mr. Fenerty out to that extent. Now, as I understand the process, you use in your plant, it is one which makes use of the gas from the methane side of the chemical composition of the gas?

A That is right.

Q And roughly the use of gas in industry is divided between the type of industry that you have, based largely on the methane, and then the other type of industry, or can you tell me, if you might, the industries dependent upon the liquified petroleum gases, the ethanes, butanes, propanes?

A There are industries that use those, yes.

Q And would you agree with me that those are the type of products that are obtained from absorption plants, natural gas plants and refineries rather than direct from natural gas transporting companies?

A If they want those components of gas exclusively for the plant that is where they are normally obtained, I believe.

Q But the only industries that are dependent upon direct supply of gas from a field or pipe line gas are the industries that are based on the methane side of the chemical formula. I am excluding carbon black.





R. S. Woodford,  
Cr. Exam. by Mr. McDonald.

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A Yes, I realize that. I think it is true that some industries that need only the higher hydrocarbons can obtain their supplies from refinery gases and absorption plants which you mention. Our plant would not be, those gases would not be particularly used in our plant.

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R. S. Woodford  
Cr. Ex. by Mr. McDonald.

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Q Now, could you tell me this, the product of your plant is the type of fertilizer which is not generally used in Canada?

A At the present time that is true.

Q Yes. What I have in mind is that the ammonia base fertilizer is not required for the prairie market, it is not suitable for the soil here at this time, at any rate?

A The main requirement of the Prairie Provinces at the present time is phosphate, so that we supply them with phosphatic fertilizer from our Trail plant. However, that also contains ammonia.

Q And part of that ammonia is provided from your plant at Calgary, and then moving it to Trail for further processing?

A Part of our ammonia is used further at Trail and might conceivably find its way back to the prairies.

Q But insofar as the ammonia base fertilizer is concerned, your plant produces for export rather than for sale in Canada?

A That is right.

Q In previous Commissions we have used the term, I think, that in one month your plant could produce all the ammonia base certilizer required for Canada?

A Yes, that is probably correct.

Q So that for eleven months of the year you are operating for export?

A Yes.

Q And your market is a world market?

A It has been in the past, yes.

Q Just one other thought, Mr. Woodford, how much of the gas is used in the nature of fuel, as apart from raw products?





R. S. Woodford,  
Cr. Ex. by Mr. McDonald.

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A In our plant?

Q Yes?

A It is roughly 50%.

Q Now, on the basis then of 9,000,000 a day roughly 4,000,000 would be?

A About 4,000,000 would be fuel.

Q Would that be for boilers?

A A proportion of it, a small proportion of it is for boiler fuel, the major part of it is for burning as fuel in what we call reformer furnaces which turns the natural gas into the product that we want.

Q Yes?

A There is no steam vapour involved in that particular process.

Q Yes. That is all.

MR. FRERE: That is all the evidence I have to submit at this time, Mr. Chairman.

THE CHAIRMAN: Thanks, Mr. Woodford.

MR. McDONALD: Sir, I will recall Dr. Nauss, and Mr. Fenerty has some questions, and then I will call Mr. Brownie, and then I will submit the deliverability submission.

MR. C. E. SMITH: If Dr. Nauss is going to be heard again, I think it would be more advisable if you left him until tomorrow, and that will suit some of us.

MR. FENERTY: The only reason I would like to get through with this particular subject, it is just the general terms, it is not in detail, it may have some bearing on the examination of the following witnesses.

THE CHAIRMAN: Could we have Dr. Nauss now and have him back again?



Dr. A. W. Nauss,  
Cr. Ex. by Mr. Fenerty

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MR. McDONALD: Certainly. We will suit all Counsel. Mr. Fenerty can deal with him, and the other Counsel can deal with him tomorrow.

MR. C. E. SMITH: The other Counsel may not have to deal with him then.

MR. FENERTY: Yes.

.....

DR. ARTHUR W. NAUSS, recalled,  
already sworn, cross-examined by Mr. Fenerty, testified as follows:-

Q Dr. Nauss, I was interested in a statement found in Exhibit 78, a copy of a letter from the Imperial Oil Company. If you will just look at the last part of the second last paragraph and the last paragraph. You see there what the writers of that letter say, the last part of the second last paragraph, following certain reasons they have given,

"If so, the gas volumes produced along with the crude oil will not reach the magnitude that might have been expected from an expanding gas cap drive in the D-3 and our estimates have been modified accordingly."

Do you happen to know approximately how many wells have been drilled before the estimate which is now modified was made?

A How many wells had been drilled?

Q Yes? At the time of the original estimate, that was the estimate for the Dinning Commission that is now being modified by this letter?

A Well, there was - I don't know the exact number at that time.





Dr. A. W. Nauss,  
Cr. Ex.by Mr. Fenerty

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Q Oh, roughly, 10, 12, a dozen?

A Oh, there was more than 10, 12 or a dozen, I think.

Q What is that?

A There was more than I think just a dozen.

Q That is enough for me. I don't care whether 20, 30 or 50, but after drilling a substantial number of wells, it was found necessary to modify the estimates?

A Yes, they had drilled a large number of wells in the intervening period, that is correct.

Q But, I mean, before that there had been a substantial number of wells?

A Yes.

Q And that is the basis for the following paragraph at the end,

"While the engineering work done to date on the Leduc reservoirs has been most comprehensive, the fact remains that the field is still in the early stages from the standpoint of reservoir life. Much more is to be learned and our ideas on reservoir-drive mechanisms may or may not change materially in the future."

Now, that letter was written after how many wells had been drilled, would you say?

A Well, this letter was written on February 16th, 1950.

Q There were a lot of wells drilled before?

A There was a large number of wells.

Q And you would not quarrel with that statement as an engineering and a geological statement, notwithstanding the large number of wells it might be necessary to



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modity?

A Yes, I would agree with that statement.

MR. McDONALD: Would you speak up?

A Yes, I would agree with that statement.

Q MR. FENERTY: And that statement would apply with greater force, would it not, to various areas where one or two wells only have been drilled?

A This is concerned with an oil field.

Q Yes?

A And in oil fields where only one or two wells have been drilled they would have limited information.

Q Yes?

A Upon which to base estimates concerning water-drive and petroleum engineering.

Q Yes?

A But these problems do not come up in pure gas fields.

Q Those particular ones about your water drive do not come up?

A These particular ones that they are referring to in the last paragraph....

Q Yes?

A ...do not come up.

Q But you have other problems that do come up as developments take place in gas fields?

A Yes, there are.

Q And would it not be equally true that much more development is required in almost all of these fields that you have discussed here before you can reach any accurate conclusion?

A A large number of wells would have to be drilled in any





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one of the pools in order to know exactly all the final answers, that is true.

Q Yes?

A But just the same we are also in a position to make estimates.

Q Oh, yes.

A Where by comparisons and good judgment we can make good estimates.

Q And it may be low or it may be high, regarding future developments?

A That is correct.

Q So that then in what you are calling proven fields, because of the presence of gas there necessarily at the present time, such as Jumping Pound, Pincher Creek and those various ones that you have discussed with one well drilled, they are necessarily estimates which may have to be materially modified one way or the other in the future?

A Yes, that is correct, but in our one well field you will notice that we are making only those predictions which can be made from that one well.

Q Yes?

A We are not predicting that we know all about the field which that well discovered.

Q You do not mean that you are counting only on that well?

A We are not counting only on that well, no.

Q No, I didn't think so.

A But in the case of the one well field, we have only the information from the one well, and the surrounding data.

Q Now, Doctor, let us turn a minute to the very comprehensive and complete work you have done in connection with additional



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fields. Now, I am coming to, what page is that, the summary is gathered together in the second page, and it has not been marked as an exhibit yet, has it?

MR. McDONALD: Yes, it is marked.

MR. FENERTY: What exhibit is it?

THE CHAIRMAN: Exhibit 91.

MR. McDONALD: Exhibit 91.

MR. FENERTY: Exhibit 91.

Q And you have there at the top of page 2 a resume of various fields?

MR. C. E. SMITH: At the top of page what, Mr. Fenerty?

MR. FENERTY: At page 2 on this Exhibit 91. There are a couple of other pages, and then there is General 1 and 2.

MR. C. E. SMITH: All right, go ahead.

Q MR. FENERTY: Dr. Nauss, you have 1, 2, 3, 4, 5 fields mentioned where you have previously reported a total of 6,117, that is billion, isn't it?

A Yes, that is right.

Q And then 6,246. With a total now of 6,246, and you show where the increases come from. Now, my examination of the list of the areas from which you propose to take gas - I guess that is in the other report. Yes, shown in Exhibit 78 in detail, and it includes only one of those areas, Excelsior, is that right?

A In fact it includes none of those areas.

Q Oh, I thought perhaps Excelsior was in?

A That is, the pool was not. None of these pools were taken into consideration in that originally.





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Q None of those pools are potential ssuppliers for Southern Alberta,are they?

A Yes, I think some, they are potential suppliers.

Q You mean if they get desperate enough they may have to go that far afield, is that it?

A It is a matter of cost.

Q That is a fair statement?

A If they can't get it closer, they might have to take it from the North.

Q But if they lose what they have closer they may have to go to the North, is that it? That is just reasonable and fair, you do not have to study the implication?

A Well, yes, if you lose what you have down here and run out you would have to go to the North.

Q We each have our own way of putting it?

A That is right.

Q And can you tell me why, if you are not going to take it from there, and the northern part, the Northwest distribution system is provided for, and I am not too concerned at the present time with that, but in connection with the Canadian Western, the Southern distribution system, can you tell me, admirable as the report is, why it is no element for consideration at this time?

A Why it is no element for consideration?

Q Yes? Just why did we take it?

A Well, it increases the total reserves that Alberta has.

Q Yes?

A It builds up our sum total.

Q Yes?

A Builds the total reserves higher above the requirements,



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the minimum requirements.

Q Yes?

A But in addition to that, Excelsior, Jarvie and Leduc, those three that are listed here, can be considered as sources of supply for Edmonton, or for the West coast Transmission.

Q As far as Leduc is concerned, you might say it is a present supply for Edmonton?

A Not this particular pool is not a present supply for Edmonton.

Q It is a separate pool?

A This is the Lower Cretaceous.

Q I will clear that up. As a matter of fact, there is no element in determining whether in this day and generation we have export and still sufficient supply for internal consumption in Southern Alberta, is there?

A Oh, I think this report has a very definite value in considering export, or whether you have a sufficient supply. These are supplies which can be drawn on.

Q Well, you don't want any part of it, do you?

A Yes, we do.

Q For export now?

A We are interested in these pools.

Q But you do not contemplate taking it from them?

A We haven't listed it taking it from there, we haven't placed it in our plan but it could be placed in the plan.

Q And should you perhaps get that into your plan and take a little less from the South adjacent to Calgary?

A Yes, that is correct.

Q Have you thought of doing that?





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A We have thought of doing that. We could take this into our plant and take a little less from the South.

Q It would cost more?

A No, it would cost less, I think.

Q Are you working on that now?

A We are working on it.

Q Well, let us hope that you are successful. But I gather from this Exhibit 78 that at this time you do not contemplate taking it from areas other than those mentioned in detail in this exhibit?

A That is correct. You see, as new developments come along...

Q Yes?

A ....we will be in a position to revise those areas, but at the present time our application is based on those areas.

Q Yes, I see.

A The picture in regard to reserves is continually changing.

Q Now, my understanding is that in this Exhibit 78, showing the various areas in which you propose to get gas, you propose to take gas from all of the major proven areas in this Province other than those tributary to the Northwest distribution system, we will say, such as Leduc and Viking-Kinsella, that is true, isn't it, just about?

A We have indicated that no gas will be taken from Viking-Kinsella for Westcoast Transmission.

Q Pardon?

A We have indicated that no gas will be taken from Viking-Kinsella for Westcoast Transmission.

Q Yes?

A But we have shown on our deliverability charts that some



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gas will be taken from Leduc.

Q And that gas is available, is it?

A The gas is available from an engineering standpoint, yes.

Q Yes, but can you pull out a dollar bill and buy some of it?

A I am not familiar with the contract or anything.

Q As a matter of fact, do you happen to know whether any of this gas that you have been discussing is available, and, if so, how much?

A Available by purchase? You are talking about contracts?

Q Available under contracts or otherwise for this operation?

A I am unfamiliar with the contract.

Q You are?

A Yes.

Q I see. I will come to that in a moment. Now, my understanding is that you do not contemplate any encroachment for export on the reserves tributary to Edmonton, the Viking-Kinsella. You say perhaps some from Leduc?

A No, we do not.

Q No. And I gather from the fact that you propose to take gas from all of these other sections mentioned that your plans do not contemplate the reservation or dedication of any areas whatsoever other than the dying Turner Valley field to the Southern Alberta distribution system, am I right?

A Our plans do not show the dedication of any area other than Turner Valley, that is correct.

Q Yes?

A But we do have in mind the dedication of reserves, of certain blocks of reserves to your requirements.





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Q Do you mean by acreage, so many acres that you can show me?

A No, not by acreage, but of the gas volumes themselves.

Q You mean what is left in the field after certain operations?

A No, we have in mind that Calgary should be served first, and we are willing to meet that requirement.

Q That is what I am going to ask you to tell me about presently, because to me what we have had so far is window dressing, and we are going to get down to how you are going to protect them, if you can, but at the moment you have no reserves by acreage, contemplated reserves, for the supply of the South?

A Other than....

Q Turner Valley?

A Turner Valley, and, of course, Bow Island.

Q Bow Island?

A Yes.

Q Yes? I remember Bow Island. We always will. Now, Dr. Nauss, my recollection is, and I have got clippings of them, with regard to statements made for publicity, both before the Dinning Commission and this Commission, that it always has been stated that local consumption must be protected, both as to reserves and price. Now, I want to get down to details, because it does seem to me, that so far we have been very much in the position of Mark Twain and the weather, everybody comes here and talks about it but so far nobody has done anything about it, and I am going to see if you can do something about it, and if you are not the one to do something about it, perhaps someone will tell me who is going to do something about it



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before we get away this week. Now, let us take, for instance, this data which you have correlated here, an immense amount of work and admirably done, when it comes to giving the details of reserves and so on, my understanding of the situation is that you have to, or that you have put together in one cover, under one cover, we will say, certain of the facts given before, from which it was proven during the last Hearing, proven by Dr. Hetherington, very ably I might say, that dealing with proven reserves, we had a shortage both for export in Southern Alberta, I mean, we had a shortage both for export and for Southern Alberta when you projected it to 30 years. Now, so far so good.

A You said reserves?

Q Proven.

A There is not a shortage of reserves.

Q Proven recoverable gas, let us forget all about reserves in place from now on?

A I think what you mean is deliverability each day, isn't that right?

Q Total deliverability for 30 years?

A Each day.

Q The volume, I am not talking necessarily about each day, I am talking about the basis on the total amount to be delivered. Now, I want to discuss that with you. I am going to suggest to you that this may be, I think, evidence Dr. Hetherington may give me when he is on the stand, but so far that evidence relates to these areas and it has not changed the picture substantially, although it gives some additions in these areas, that is what it amounts to.

A My understanding of the situation is this, that sufficient





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reserves are present in Alberta and available to supply the Canadian Western system for 50 years, to supply the Northwest Utilities system for 50 years, that is the reserve I am talking about, and recoverable reserves to supply Westcoast Transmission Company for 20 years.

Q I see. You were here through the other sittings, weren't you?

A Yes, I was.

Q And you did hear the evidence?

A I was talking about recoverable reserves there. Now, in regard to the deliverability, the matter of meeting peak day requirements, in addition to having the requirements of a total supply, you have to be able to meet it each day.

Q Yes?

A Meet the requirements each day as they come out throughout the period.

Q Yes?

A And it is a little more difficult to meet the requirements each day throughout that period.

Q Well, is this what you mean, I mean in round figures now, that in your submission there is sufficient gas that can be recovered to meet those requirements for 50 years, 50 years, and 20 years that you have mentioned?

A That is right, the volume.

Q But that ~~might take~~ 100 years to get it out, or 75 years, is that what you mean?

A I wouldn't like to say it just exactly that way.

Q Well, now, is it fair? Have I stated it incorrectly?

A This is what I would say - I was going to go further with



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my statement there.

Q "I see?

A That in addition our charts, which will come up later....

Q Yes?

A Show that there is deliverability, that gas can be gotten out at the proper rate for the next 30 years for the Canadian requirements, and for the next 20 years for Westcoast Transmission Company requirements.

Q At a cost?

A At a reasonable cost. Now, we have not gone into the cost too much on that.

Q Somebody has?

A I haven't.

Q Aren't you prepared to go into the costs with me?

A I am prepared to discuss it a little bit.

Q What?

A I am prepared to discuss it a little bit, but it is not, the engineering of it, is not in my field, the cost engineering is not.

Q I do not know whether you are in a position to speak for the applicant at all, but I do hope you propose to discuss the engineering features and the possibility of getting sufficient gas, no matter what the cost, and then say to me "That will be determined by the Utility Board", whether it is 5 cents a thousand or \$1.00 a thousand. You haven't any hope of doing that, have you?

A No. My definition of recoverable reserves are those reserves which are recoverable economically, you see.

Q Yes?

A You could recover a lot more gas than I have indicated un-





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economically at an excessive price.

Q All right. Now, I am going to try and examine you, if I can, on statements made very clearly and unequivocally, showing a shortage of deliverable gas over a period of 30 years, on the basis of existing regulations and formulae for both the Canadian Western and the export. Now, you may disagree with it, and you may try to prove it wrong, or somebody else may prove it wrong, and I have them all in writing and concise and the shortage is there. Now, I might be all wrong, but I want to discuss it on that basis with you, assuming that that evidence is right, will you discuss it with me, if you will assume for the moment that it is right, or would you totally disagree with it?

A No, I won't totally disagree with it, and I am very willing to discuss it with you. I would point out that scheduled withdrawals are very flexible. You can work them out in several different ways.

Q I see?

A In quite a number of different ways.

Q I see?

A The one we presented at the last Hearing did show a deficiency, I will agree with you, and we have done further work on it, and I think the submission to be presented will improve the situation considerably.

Q But on the basis that was worked out, and I assume it was worked out on a reasonable and economic basis, because if it were not then we have to get one, but assuming it was worked out on a reasonable and economic basis, it did show a shortage.

MR. McDONALD:

May I just interrupt for a moment,



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Mr. Fenerty?

MR. FENERTY: Certainly.

MR. McDONALD: As I recollect the submission, it was made on deliverability, the submission which was made on deliverability, it was deliverability for the Westcoast pipe line, and that was all that it ever pretended to be.

MR. FENERTY: I will tell you what my recollection is, and I won't give the exact figure, my recollection is that when I requested a projection to 30 years from 20 ye rs, we had a total requirement, and I have not looked at it since, of the Westcoast and the Canadian Western of something over 1800 million.

MR. C. E. SMITH: That was in Mr. Fenerty's cross-examination of Dr. Hetherington, not in his submission.

MR. FENERTY: Pardon?

MR. C. E. SMITH: That was when you were cross-examining Dr. Hetherington.

MR. FENERTY: Yes.

MR. McDONALD: If I may continue, Mr. Fenerty, just see if I can clear the way.

MR. FENERTY: Yes.

MR. McDONALD: And then in cross-examination you brought into the Westcoast's submission the requirements of the Canadian Western.

MR. FENERTY: Yes.

MR. McDONALD: And when the two were added together there was a definiency as Dr. Nauss has mentioned.

MR. FENERTY: Yes.

MR. McDONALD: Now, some time prior to that, on cross-examination, the applicant had undertaken to draw a





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deliverability program for all of the consumers that were now existing in Alberta, plus the export.

MR. FENERTY: Yes.

MR. McDONALD: Which has been prepared.

MR. FENERTY: Yes, I see.

MR. McDONALD: We have not as yet made a positive submission to this Board on the point that you, as I understand it, intend to cross-examine Dr. Nauss on?

MR. FENERTY: Yes.

MR. McDONALD: Now, I do not want to interfere with your cross-examination if you wish to proceed with it, but I think that you should not refer to our submission as being one that has been presented to cover the point that you evidently have in mind.

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MR. FENERTY; Oh, well now - -

MR. McDONALD: We have that submission now to be delivered to you.

MR. FENERTY: Is it your intention now to wipe out that shortage we had under oath?

MR. McDONALD: Whatever the figure was - I might also mention this, Mr. Chairman, that we have a geologist on the stand who has had considerable experience in petroleum engineering and has a fairly good knowledge of how to deal with this situation since he has been working on it for some four or five months, but he certainly is not one who knows anything about rate bases or rates of return or amortization of pipe lines and all that is involved in the question of cost. We can and will call a witness who will deal with the question of costs in the submission we are going to put in. I intend also to call Mr. Brownie and examine him to some extent on that matter of costs. I do not think it is fair to attempt to get rate bases per Mcf. or distribution facilities for 30 years in the future from Dr. Nauss.

MR. FENERTY: It had not occurred to me that there would be any question about this shortage. But apparently it seems to be a matter now of debate, is it?

THE CHAIRMAN: Mr. Fenerty, we did ask Mr. McDonald on two different occasions to give us particulars of the data used by Dr. Hetherington in preparing his submission on deliverability, deliverability data for all fields that may lie within the route of the pipe line or an integrated system and to meet Alberta and export requirements. If Mr. McDonald has an exhibit - and I understand he has - and is going to put in one, covering these points, it might be better for us





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that you should defer your cross-examination until we can see what the situation is now. Would that be satisfactory?

MR. FENERTY: It may be. It may be that this is not the witness that I need.

THE CHAIRMAN: I think you brought up these points before on the last day of the last hearing and we agreed at that time we would get this additional information to show deliverability and to show how it would meet the requirements both for Alberta and for export, because the present exhibit as Mr. McDonald pointed out only deals with deliverability for the Westcoast system.

MR. FENERTY: Perhaps it might be well to defer some of this, and perhaps all of it, until we examine this additional submission.

THE CHAIRMAN: I think if Mr. McDonald is putting in a submission covering the points I have outlined, it might be well to defer it.

MR. FENERTY: Might I say something now that has been giving me a good deal of concern and trouble? I say it now so that my friend will not be taken by surprise in the position I am taking. My view of the situation as indicated here is that we all have to live within the policy of the Government of Alberta. I have here press announcements of those policies. It may be that this new submission my friend is going to put in will conform, or attempt to conform, to that policy but we are in our fourth week of this inquiry and I think there was some idea we might finish this week. But I am going to attempt, with the approval of the Board, to find out through somebody in connection with this application just how they are going to conform to Government policy. My



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idea of this inquiry is that it involves showing first - the Board may disagree with me - showing first what areas we have for Southern Alberta and how they are going to be protected as to price. That is within the Government announcements, and what there is going to be left over for export. In other words, priority for internal consumption. But everything that I have heard so far has skirted around it and has been set up on the basis that export was going to get gas from certain areas, under certain contracts, and that it was hoped there would be sufficient available, no matter what the price was, to provide for local requirements. For instance, in one of the first statements that was stated clearly that new residents of Alberta and new users of gas, industries and others, would have to look for further supplies, while it was contemplated that those using gas for the first time outside the Province of Alberta would look to proven areas. And that those using gas in new areas supplied in the Province of Alberta would have to look to non-proven areas. And this whole submission has been set up on the basis that "there is gas here for export and we hope we can show you there will be gas left," instead of the opposite way around. To the best of my ability I am going to ask somebody, and I do not know who it is, my friend Mr. McDonald may tell me, how they are going to meet these announced Government policies which I propose to read to them. I thought it might be Dr. Nauss but we are getting other witnesses.

MR. McDONALD: I might say in reply to Mr. Fenerty that everything that has been placed in this inquiry has been given for the purpose of establishing the bases to meet the very points he is raising. What is the market for gas? We





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had to establish what the export market might be and we also had to establish what the local market might be. Then I hope my friend Mr. Fenerty appreciates this, that before you can arrive at the economics you have to arrive at the volume and the availability of the gas and how it is going to be moved, and the size of your pipe line and the volume of the demand for future years. We are going to detail that. I appreciate what he was trying to bring out, that we should conform with the Government policy but we can read and we know what the Ministers have said and we know if we do not satisfy them we are not going to get very far with this application. But I do not want to be placed in the position where, within the first week or so, of answering questions that may only be necessary later on.

The other point that should be dealt with is that we are not going to be ever in the position where we are not willing to come back before this Board and deal with any points that anybody in the Province wishes to raise. In other words, there will be no closing of this hearing until the Board and everybody is satisfied.

FRANK AUSTIN BROWNIE, having been duly sworn, examined by Mr. McDonald, testified as follows:-

Q Mr. Brownie, you are President, I believe, of the Canadian Western Natural Gas Company Limited?

A That is correct.

Q And what is your connection with the Northwestern Gas Company Limited?

A I am also President of that company.

Q Yes. I was not sure of that. At the request of myself you have prepared a submission with regard to the matter of future



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uses of gas in Alberta with particular reference to the two systems with which you are connected?

A That is correct.

Q I might make it plain to the Board and you can verify it that this request was that you should use your independent judgment and you were asked to do so because you are interested more than anyone else, possibly, in the future uses of gas in Alberta?

A Yes.

Q And this is entirely your own report without reference to this applicant?

A That is correct.

MR. STEER: That is Exhibit 42.

THE CHAIRMAN: Is Exhibit 41 going to come into this?

MR. McDONALD: I leave that entirely to the discretion of Mr. Brownie.

THE WITNESS: What is 41?

MR. STEER: That is Mr. Milner's submission in the Dinning Commission.

MR. McDONALD: Yes, to which you referred.

A I did not intend to use that, not particularly, unless someone wants me to.

Q MR. McDONALD: It is already filed, if you want to refer to it.

A It is referred to in Exhibit 42 and I do not mean to read it. The first page is simply a table of the contents and I do not see any point in reading that. This is a submission regarding the use of natural gas in the Province of Alberta, prepared by Canadian Western Natural Gas Company Limited and





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Northwestern Utilities Limited, and related matters. I will proceed to read the submission.

"This submission is for the purpose of laying before the Board certain information which it is considered will be helpful in the present enquiry and which can best be presented by these Companies.

Estimated Natural Gas Requirements of the Province of  
Alberta in 1960.

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These Companies, through their former President, Mr. H. R. Milner, presented to the Dinning Commission (Exhibit 43) a report entitled 'Future Gas Requirements of the Province of Alberta'. Additional experience since that time leads the Companies to feel that the conclusions of that report should be modified. The actual gas consumption of the two Companies in the year 1949 was somewhat higher than would be consistent with the former 1960 estimates. Moreover, the anticipated consumption in the year 1950, which can be fairly closely estimated, justifies material upward revisions in these estimates. For instance, in the Canadian Western system an increase between 1948 and 1960 of about 5.5 billion cubic feet was forecast. It is now estimated that the increase between 1948 and 1950 will be 4.4 billion cubic feet.

The former estimate of the 1960 consumption was 70 billion cubic feet. This figure has now been revised to 78 billion cubic feet. Statements "A", "B" and "C" annexed hereto show the basis for this revision. Statement "A" shows for the year 1948 in each of the classes, -- Domestic, Commercial and Industrial, -- for the Canadian Western system, the average number of customers, the population, the customers



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per 100 of population, sales per customer M.C.F., and annual sales M.C.F. It shows on the next line the estimated 1960 consumption which was based largely on 1948 experience. These two lines come directly from the report of December 30th, 1948, which was entered here as Exhibit 41. It further shows the 1949 actual data and a revised estimate for 1960, the revisions resulting from 1949 experience and estimates for 1950.

Statement "B" shows the same information for Northwestern Utilities, Limited.

Statement "C" shows a summary for the Province of the 1948 and 1949 actual consumption, and the estimated 1960 consumption. This statement is patterned after Statement No. 3 of the report presented to the Dinning Commission.

It will be noted that the 1960 population estimates have not been revised. What are considered to be reasonably reliable population figures for 1949 are available for Calgary and Edmonton. These both lie above the projected population curves in Figures 1 and 4 in the December 30th, 1948 report. This has not been taken as justification for revising the 1960 population estimate, since it was not assumed that the population trend would necessarily follow the exact line projected on these figures. Rather it was assumed that there would be a rapid rate of increase in the next few years followed by a more modest rise in later years, ending at the projected 1960 points.

The possibility of a much more rapid growth than that forecast, however, can by no means be excluded, particularly in Edmonton. If, for example, it is assumed that additional large gas reserves will be discovered it probably





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follows that substantial new oil reserves will be found. These may very well result in substantially higher populations than those forecast, not only in existing communities such as Edmonton, but also in new oilfield centres. It should also be re-emphasized that for various reasons several large areas of population,--notably West Jasper Place and Beverly,--have not been included. While some effect has been given to these communities in the saturation and the sales per customer figures, the result is considered to be conservative.

To sum up, the present modifications result from an application to the same population figures as formerly used of adjusted figures as to customers per 100 of population and sales per customer together with some revisions in respect to the Special loads. These adjustments result from 1949 actual experience and that anticipated in 1950.

Statements "A" and "B" show the total population served by these two Companies in 1949 to be 302,500, to which may be added an estimated 9,000 for West Jasper Place, or a total of 311,500. This is approximately 36% of the total population of the Province. (871,000 in 1949 - Dominion Bureau of Statistics). Do you wish me to deal with these statements, Mr. McDonald, or is that sufficient? They are a lot of figures and I do not know what else I can say about them.

MR. McDONALD: I was going to question you later in regard to them. I think possibly you should continue.

A All right.

The Serving of Additional Communities by Canadian Western and Northwestern.

Since 1939 Canadian Western has added to its system



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the Villages of Coaldale and Barnwell, and the Hamlet of Monarch. Northwestern has extended lines to the Cities of Wetaskiwin and Red Deer, the Towns of Vegreville, Camrose, Ponoka and Lacombe, and the Villages of Bittern Lake, Blackfalds and Morningside.

Canadian Western has plans well advanced for the serving of gas to Exshaw and Banff, and Raymond and Magrath. It is intended to extend lines to these communities as soon as additional gas reserves are available if at that time the projects are economically feasible. Canadian Western is also investigating the possibility of serving gas to the Town of Hanna from local supplies, and has had discussions in this connection with both town officials and possible suppliers of gas. Northwestern Utilities, Limited, will this year extend natural gas to Oliver and Fort Saskatchewan, and is endeavouring to obtain a franchise for gas service in the Town of Leduc. We did not get that franchise.

In Statement "C" the requirements of these towns have been included in Canadian Western or Northwestern in those cases where they would be supplied from the same gas reserves as the balance of the system.

Relationship of Estimated 1960 Consumption to the Long Range requirements of the Province.

It has been stated to be Government policy that in considering the export of gas from the Province the gas requirements within the Province should be protected for a fifty-year period. In view of the great difficulty of estimating what the gas consumption of the Province might be fifty years hence no attempt is made here to do more than estimate 1960 requirements as an indication of future prospects. If, however the estimated 1960 requirements are





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multiplied by fifty, the following figures result:

Canadian Western	1,575 billion cubic feet
Northwestern	1,695 billion cubic feet

Even apart from Government policy in this connection, it is a well-known fact that favorable utility financing must be based on a sure gas supply for a thirty-year period. On this assumption, and multiplying the estimated 1960 requirements by thirty, the following long range marketable gas requirements for the two systems are indicated:

Canadian Western	945 billion cubic feet
Northwestern	1,017 billion cubic feet.

Steps Taken by Canadian Western and Northwestern to Provide Adequate Long Range Reserves, and Relationship of Gas Gathering Grid.

The Canadian Western Company has made extensive studies in connection with the possible tying in to its system of the Jumping Pound or Pincher Creek fields or the fields south of Foremost. A report on the fields south of Foremost was obtained from an outside consultant, and a similar report on the Jumping Pound field is in the course of preparation. The studies have also involved not only preliminary designs of the required facilities, and estimates of their costs, but an examination of the overall economics. One of the difficulties is based on the fact that heavy investments have been made by the Utility Companies in Turner Valley. An allocation to another field of a substantial portion of Turner Valley's market during the past few years would have resulted either in a financial loss to the Utilities in Turner Valley or a sharp rise in the price of Turner Valley gas. It has been the objective of Canadian Western to provide adequate long range reserves without too



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violent changes in the retail rate structure. The Company has discussed with McColl-Frontenac and the Union Oil Company of California the possibility of connecting the fields south of Foremost, and similarly with the Shell Oil Company of Canada in regard to the Jumping Pound field.

The sharply increasing market on the Canadian Western system is tending to simplify the problem of connecting a new supply with a minimum of disturbance to Turner Valley.

The completion of a gas gathering system such as that proposed by Alberta Inter-Field Gas Lines Limited might be beneficial to Canadian Western in several ways. If it is assumed that say the Jumping Pound field is tapped by Canadian Western at an early date, peak load gas from the Inter-Field system can be supplied a few years hence when the deliverability of Jumping Pound, Turner Valley, Foremost and Bow Island will again be inadequate to meet rising peaks. The Inter-Field system would be a protection against mechanical failure, and would still further lessen the disturbance to the Turner Valley situation.

Northwestern Utilities, Limited in the year 1949 purchased the interest of Imperial Oil Limited in the Viking-Kinsella field, and it has entered into collateral agreements with the Province of Alberta, the Canadian Pacific Railway Company, and the Hudson's Bay Oil & Gas Company Limited, with the result that Northwestern now controls over 94% of this field. In addition, Northwestern is in the course of working out a contract with Imperial Oil Limited for the purchase of gas from the Leduc field. Not only does this strengthen the Company's reserve position, but it is





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important from a Provincial point of view because it eliminates the necessity either of flaring Leduc gas or returning it to the formation. Orders have been placed for the necessary pipeline materials and the other equipment necessary to bring this gas into the system at the earliest possible date in the spring of 1950, and very considerable expenditures have already been made for engineering services in this connection.

The benefits accruing to Canadian Western and Northwestern from interconnection with a Province-wide grid are paralleled by comparable benefits to the grid from such interconnection. For instance, the dry gas fields of the existing Companies could supply peak load gas for the grid provided it were replaced in the summer by repressuring. Moreover, this repressuring in itself would provide an outlet for surplus oilfield gas in the summer which might otherwise be wasted.

#### Relationship of Long Range Requirements to Reserves.

It is of interest to compare the future requirements over a thirty-year period as shown above with the natural gas reserves now connected to the two systems, and where these reserves are inadequate, to nearby reserves not yet connected.

Canadian Western's connected reserves consist of Turner Valley and the two small southern fields, Bow Island and Foremost. These reserves do not constitute an adequate long range supply, and their economic capacity to supply peak loads is at the present time about equal to the peak demands. The peak demands are increasing rapidly, and the connecting of a new source of supply at an early date is



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essential.

Assuming for this purpose that the Jumping Pound field is the first source of additional reserves for Canadian Western, the situation is as follows:

Thirty-year requirements	<u>945</u> billion cubic feet
Long Range Reserves -	
Turner Valley (1)	251 billion cubic feet
Bow Island (2)	19       "       "       "
Foremost (2)	21       "       "       "
Jumping Pound (3)	671       "       "       "
Total	<u>962</u> billion cubic feet

Now I would like to make it quite clear that I do not support necessarily any of these reserve estimates. But we wanted to use such figures as were more or less constant and we decided to use the figures given by Hume, but in respect to Jumping Pound his figures were gross. They were not reduced for shrinkage and various losses, so we accepted for that purpose Dr. Nauss's figures. We do not necessarily agree with them. As a matter of fact I referred earlier to a report we were having prepared on the Jumping Pound field. That report was prepared by Ralph E. Davis and it indicates marketable reserves to be of the order of 400 billion cubic feet.

Northwestern's present connected source of supply is the Viking-Kinsella field. If additional long range reserves are required the natural source appears to be the Leduc oil field. The Northwestern situation, then, is as follows:

Thirty-year requirements	<u>1,017</u> billion cubic feet
Long Range Reserves -	
Viking-Kinsella (1)	850 billion cubic feet
Leduc (2)	576       "       "       "
TOTAL	<u>1,426</u> billion cubic feet





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Here again, I might mention that Ralph E. Davis' opinion as to the reserves in the Kinsella field is 600 billion cubic feet compared with Dr. Hume's 850. This whole submission is not of any great value but it was just put in for the purpose of showing in a very general way the relationship of the requirements to the reserves and we were not particularly concerned with whether the reserves might be in accordance with our own ideas or not.

STATEMENT "A"  
CANADIAN WESTERN NATURAL GAS COMPANY LIMITED

Population, Customers and Sales.

DOMESTIC

<u>Year</u>		<u>Average No. of Customers</u>	<u>Population</u>	<u>Customers per 100 of Population</u>	<u>Sales per xx Custom- er -MCF</u>	<u>Annual xxSales MCF</u>
Actual	1948	31,199	139,000	22.4	215	6,699,000
Former Est.	1960	39,800	173,000	23.0	210	8,400,000
Actual	1949	33,676	143,700 <sup>x</sup>	23.4	214	7,197,000
Revised Est.	1960	45,000	173,000	26.0	210	9,500,000

COMMERCIAL

Actual	1948	4,147	139,000	2.98	980	4,066,000
Former Est.	1960	5,000	173,000	2.9	900	4,500,000
Actual	1949	4,330	143,700	3.01	1,004	4,345,000
Revised Est.	1960	5,400	173,000	3.1	1,000	5,400,000

INDUSTRIAL (Excl. Imperial Oil, Alberta Nitrogen, and additional Power Plant loads)

Actual	1948	160	139,000	0.115	18,919	3,027,000
Former Est.	1960	190	173,000	0.11	19,000	3,600,000
Actual	1949	160	143,700	0.111	18,600	2,976,000
Revised Est.	1960	190	173,000	0.11	19,000	3,600,000

x	Population - 1949 -	Calgary	108,200
		Lethbridge	20,300
		Towns	15,200
		TOTAL	<u>143,700</u>

xx Adjusted to Normal Temperature.

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STATEMENT "B"

NORTHWESTERN UTILITIES, LIMITED

Population, Customers, and Sales - 1949 and 1950.

DOMESTIC

<u>Year</u>		<u>Average No. of Customers</u>	<u>Population</u>	<u>Customers per 100 of Population</u>	<u>Sales per xx Custom- er MCF</u>	<u>Annual xx Sales - MCF</u>
Actual	1948	24,784-est.	146,998	16.9	237.8	5,894,000
Former Est.	1960	49,500	225,000	22.0	230.0	11,400,000
Actual	1949	28,550	158,800 <sup>x</sup>	18.0	246.0	7,022,000
Revised est.	1960	54,000	225,000	24.0	245.0	13,200,000

COMMERCIAL

Actual	1948	3,227	146,998	2.20	1,426.3	4,602,000
Former Est.	1960	5,600	225,000	2.5	1,360.0	7,600,000
Actual	1949	3,626	158,800	2.28	1,491.7	5,409,000
Revised Est.	1960	6,075	225,000	2.7	1,500.0	9,100,000

INDUSTRIAL (Excl. City Power Plant and Imperial Oil)

Actual	1948	387	146,998	0.263	3,984.4	1,538,000
Former Est.	1960	560	225,000	0.25	3,930.0	2,200,000
Actual	1949	436	158,800	0.275	4,144.4	1,807,000
Revised Est.	1960	600	225,000	0.27	4,000.0	2,400,000

<sup>x</sup> Population - 1949 - Edmonton	137,469	
Towns	21,300	
TOTAL	<u>158,769</u>	say <u>158,800</u>

<sup>xx</sup> Adjusted to Normal Temperature.

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STATEMENT "C"

SUMMARY - ALBERTA GAS CONSUMPTION IN 1948 and 1949  
AND ESTIMATED REQUIREMENTS IN 1960

	(M. C. F.)		
	<u>1948</u>	<u>1949</u>	<u>1960</u>
<u>CANADIAN WESTERN</u>			
Domestic	6,699,000	7,197,000	9,500,000
Commercial	4,066,000	4,345,000	5,400,000
Industrial	3,027,000	2,976,000	3,600,000
Imperial Oil Refinery, Alberta			
Nitrogen and Taber Sugar			
Refinery	5,817,000	5,910,000	6,300,000
Additional Power Plant loads	-	314,000	22200,000
Sub-totals	19,609,000	20,742,000	27,000,000
Additional Possibilities	-	-	4,500,000 x
TOTALS	<u>19,609,000</u>	<u>20,742,000</u>	<u>31,500,000</u>

x Includes Banff-Exshaw @ 2,500,000

<u>NORTHWESTERN</u>			
Domestic	5,894,000	7,022,000	13,200,000
Commercial	4,602,000	5,409,000	9,100,000
Industrial	1,538,000	1,807,000	2,400,000
Imperial Oil Refinery and			
City Power Plant	156,000	732,000	4,500,000
Sub-totals	12,190,000	14,970,000	29,200,000
Fort Saskatchewan, Oliver			
and Namao	-	-	1,000,000
Sub-totals	12,190,000	14,970,000	30,200,000
Additional Possibilities	-	-	3,700,000
TOTALS	<u>12,190,000</u>	<u>14,970,000</u>	<u>33,900,000</u>

<u>REMAINDER OF PROVINCE</u>			
Presently served Communities	<u>6,072,000</u>	<u>6,542,000</u>	<u>7,000,000</u>

<u>PROVINCE GENERALLY</u>			
<u>Additional Possibilities</u>			
Towns not presently served			1,000,000
Pulp and paper plant			2,000,000
Provision for other industrial enterprises			3,000,000
TOTALS			<u>6,000,000</u>

<u>SUMMARY</u>			
Canadian Western	19,609,000	20,742,000	31,500,000
Northwestern Utilities	12,190,000	14,970,000	33,900,000
Remainder of Province	6,072,000	6,542,000	7,000,000
Province Generally	-	-	6,000,000
TOTALS	<u>37,871,000</u>	<u>42,254,000</u>	<u>78,400,000</u>

say 78,000,000

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Now, Mr. McDonald, we have felt that there was a lack of clarity of the Canadian Western situation with regard to future supply and we prepared a further submission which I would like to submit.

Q Yes, I think you should read it in.

FURTHER SUBMISSION BY CANADIAN  
WESTERN NATURAL GAS COMPANY  
LIMITED IS NOW MARKED EXHIBIT 96.

A This submission is supplementary to Exhibit 42 already presented to the Board, and is for the purpose of clarifying the situation of the Canadian Western Company with respect to future gas requirements and supply.

The total presently connected reserves are about equal to the total estimated requirements of the system through 1960. This, however, in no way indicates the immediate necessity of connecting a new supply.

As indicated on Exhibit 65, the total daily deliverability of the system is now 135 million cubic feet per day (95 million from Turner Valley, 25 million from Bow Island, and 15 million from Foremost). It is estimated that the peak demand on the system in the winter of 1950-1951 will be 151 million cubic feet per day. This means the system's capacity will be deficient by 16 million.

Should the weather be such in the winter of 1950-1951 that the potential peak of 151 million is actually experienced, sufficient load could be dumped to ensure that the supply to domestic consumers would not be endangered. Of course, we might not have weather sufficiently cold in the winter of 1950-1951 to result in that peak, but it is a peak that we have to provide for if we can. It will be extremely difficult, however, to dump sufficient load in the winter of 1951-1952 to provide for weather conditions which would produce the anticipated





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potential peak of that winter. In other words, it is necessary, before the winter of 1951-1952, to augment the system capacity.

As will be shown, system capacity cannot be augmented satisfactorily merely by the installation of additional pipe to the presently connected reserves. The only satisfactory solution to the problem is the connection of a new source of supply.

The 40 million cubic feet per day available from the Bow Island and Foremost fields represents balanced peak deliverability of the wells and the pipeline system. The deliverability of the fields themselves could no doubt be economically increased by the drilling of additional wells provided gas storage facilities in Bow Island are maintained, and if necessary increased during future years, together with the possible installation of such facilities in the Foremost field. This added field deliverability, however, could only be made useful by the construction of additional pipelines to bring this gas to the market areas of the system, the main one of which is Calgary. To add substantially to the capacity of this pipeline system would entail the expenditures of several millions of dollars.

The capacity of the Turner Valley-Calgary system (95 million cubic feet per day at present) depends on the capacity of the wells, the field gathering system and compressor stations, the gasoline plant, the scrubbing plant, and the Turner Valley-Calgary pipelines. The wells, under reasonable operating conditions, are at present capable of delivering more than 95 million cubic feet per day for peak purposes.



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A report dated January 4, 1949, by Mr. Gordon Connell, of the Royalite Oil Company, was filed as Exhibit 4 before the Board of Public Utility Commissioners in the recent hearing which dealt with the application of Canadian Western for permission to increase its retail rates. The following is quoted from the conclusion on Page 5 of this report:

"By acidizing the gas cap wells which have not already been acidized, and with the possible gas from new wells and other sources mentioned above, but not considering additional gas wells other than sufficient to make up for the abandoned wells, it appears that Turner Valley will have sufficient capacity to meet a peak load of 95,000 Mcf. per day to the C.W.N.G. lines until 1958 and possibly until 1961. This, of course, would change with any substantial change in the market requirements. For example, a cumulative increase of 20 billion cubic feet in the total market requirements over the next 12 years would mean that a peak load could not be met one year earlier than estimated.

In my opinion, the biggest question mark is the effect of liquid loading on gas capacity of crude oilwells. However, what is believed to be a reasonable allowance has been made to take care of this factor."

It is now estimated that the market requirements over the period will be substantially higher than those estimated for the preparation of Mr.





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Connell's report. He stated that the wells would continue to have a capacity of 95 million cubic feet per day until 1958 or possibly 1961. If estimated requirements consistent with Exhibit 42 were all met from existing sources, and applied to Mr. Connell's conclusion above, it would advance these dates to 1953 or possibly 1956.

It has been mentioned that the drilling of additional gas cap wells might be an important factor in extending the period during which this field will still be capable of delivering 95 million cubic feet per day. Mr. Connell's statement from his report in this connection is as follows:

" If one well is drilled and has sufficient capacity to replace the four abandoned gas cap wells then there would be six other possible locations which could be drilled to obtain additional capacity. With the field capacity declining approximately 15,000 Mcf. per day per year, the average capacity per new well would have to be 5,000 Mcf. per day to extend the time when the peak load, that is, the peak load of 95,000,000, could just be met by two years. With the lower reservoir pressure, it is very doubtful if the average capacity would be that high."

It is seen, therefore, that at the very best, and after taking all possible steps, the capacity of the wells in Turner Valley to deliver 95 million cubic feet per day will be maintained for considerably less than ten years.



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However, the allowable working pressure of the Madison and Royalite processing plants at Turner Valley limits their delivery to the Canadian Western system to 95 million cubic feet per day at a pressure of 300 pounds per square inch gauge. With this available inlet pressure, the capacity of the Turner Valley-Calgary pipelines of the Canadian Western Company is also approximately 95 million cubic feet per day. This means that if the deliverability out of Turner Valley is to be increased to take advantage of the temporary surplus well capacity, not only would the Turner Valley-Calgary lines have to be looped, but also increased capacity would have to be provided in the scrubbing plant, gasoline plant, compressor station and gathering lines. This would entail very large capital investments to provide an increase in capacity of relatively short duration.

Moreover, the additional facilities provided by this substantial investment would, within ten years, be standing idle because of the inability of the wells in the field at that time to deliver any more gas than can be handled by the presently installed facilities. In other words, due to the continuing decline of the wells, this investment would start to become useless as soon as it is made, and before 1960 would be completely useless.

Exhibit 65 indicates that whatever might be done in Turner Valley, provision must be made soon to connect a new supply. Since this must be done, it is considered only good business to spend the





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substantial sums referred to above on the connecting of this new supply rather than to spend them on Turner Valley as a temporary and inadequate stop-gap.

The useful life of such possible expenditures in Turner Valley might be lengthened if it were ultimately considered advisable to store surplus gas from other oil fields in Turner Valley in the summer. At the moment there is no assurance that this will ever be done. If it is done some time in the future, it may well be that the present pipelines, compressors and processing plants will be completely adequate for that purpose. The Canadian Western Company does not consider it a good gamble to spend substantial sums of money on Turner Valley on the possibility that such repressuring there will make them pay off.

It can be seen from the above that the presently connected sources of supply are inadequate to meet next winter's potential peak requirement by about 10%, and that there appears to be no economical way of increasing the capacity of the system from those present sources. It is apparent, therefore, that a new and substantial source of supply must be connected at the earliest possible date.

It has been stated that the reserves in the Jumping Pound field are so large that it is impossible for the Canadian Western system to afford an adequate outlet for that field in view of its limited markets. Below is a statement, based on certain assumptions, which shows the estimated annual take from the



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Jumping Pound field.

<u>Year</u>	<u>Annual Jumping Pound Take - MMcf.</u>
1952	9,500
1953	11,700
1954	14,200
1955	15,800
1956	18,000
1957	18,700
1958	19,100
1959	19,300
1960	19,500
Total -	<u>145,800</u>

Ralph E. Davis has estimated the marketable reserves of the Jumping Pound field to be of the order of 400 billion cubic feet. In supplying the quantities indicated above, and assuming only a modest market growth beyond 1960, such reserves will be exhausted in about twenty years.

Q MR. McDONALD: Just several points, Mr. Brownie, I would like you to enlarge upon, if you could, for me. That was on page 1 of Exhibit 42, the last two sentences in the first paragraph under the heading "Estimated Natural Gas Requirements for the Province of Alberta in 1960." The sentence is, "For instance, in the Canadian Western system an increase between 1948 and 1960 of about 5.5 billion cubic feet was forecast. It is now estimated that the increase between 1948 and 1960 will be 4.4 billion cubic feet." The thought I had in mind there, Mr. Brownie, is that my recollection was that the forecast was based on the addition of the steam plant at Calgary and the steam plant at Lethbridge, and one or two other industrial requirements that you anticipated





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would be made during the course of the 10 years. Now, is it not so that these plants have been added during the last two years or will be added during the course of this year?

A Yes, that is true.

Q Yes. So that to the extent of approximately  $2\frac{1}{2}$  billion these two plants have been added ahead of time?

A I don't recall. Did we provide for those specifically in our former estimate, Mr. McDonald?

Q I understood you had. The point I wanted to make, Mr. Brownie, was that these were anticipated additions of known loads, they were not loads that had been created by new industries or industries that had not been actually known would be added.

A That is correct, yes.

Q It was not a question of growth in population or anything of that kind?

A No. As a matter of fact, Mr. McDonald, I think -- I could be wrong in this but I think in our former estimate we anticipated that the power load at the Victoria Park in Calgary would drop off, and the reverse has happened, instead of dropping off it appears that it is going to continue, and it is going to increase. Now, I think what you say is true in regard to the Lethbridge power plant.

Q Then referring to your Statement A, which is practically the same as in Exhibit 41, there is one difference I have noticed, however, and that is that in the column "Customers per 100 Population" you have increased 1948 of 22.4 to 26 in 1960. Do you feel that in Calgary at the



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present time you have not reached the limit of a practical saturation of a gas market?

A No, I don't think so, Mr. McDonald. We increased 1 customer per 100 population between 1948 to 1949.

Q And you still think there is room to increase?

A Yes.

Q Notwithstanding the fact that gas has been a product here at very, very cheap prices for 40 years?

A That is right.

Q Then in the next column, "Sales per Customer", I note that you reduced the item 215 for 1948, you reduce it to 210 for 1960. Have you a particular reason for that?

A Well, we thought the average size of the domestic customer might decline because of the fact houses being built were smaller than former average, and they are better insulated and better equipped.

Q I would not have mentioned that except in the next page, Statement B, the same sales per customer, you have the sales per customer up to 245. Oh, that is contrasted to the 246 for 1949?

A Yes.

Q That indicates the difference in the severity of weather, also maybe larger houses, less insulation?

A Yes.

Q Is your item for 246 Mcf. per sales customer in Edmonton in 1949, is that adjusted to normal temperatures?

A Yes.

Q Yes, it is marked, I am sorry. It is actually marked.





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Q Then on page 2, in the second paragraph, you refer to the fact of additional large gas reserves, the discovery of which may indicate substantial oil reserves. Wouldn't the fact of additional large gas reserves in themselves take care of any question of future markets? As I read your paragraph, it indicates that you feel that the present supplies of gas should be reserved or should be kept in mind having regard to an increase in population actually arising out of increased gas reserves?

A Oh, I just put that in as a sort of heading, and in trying to estimate minimum gas requirements for the future, and it is well to bear in mind that the addition of large reserves might radically affect that and the population.

Q And as a general rule wouldn't it follow that increased oil reserves may also bring in increased gas reserves?

A I would think so.

Q Yes. Now, I come to the matter of your estimate of long range requirements, and the 50-year period. And I total the figure of 1575 billion cubic feet to Canadian Western and 1695 billion cubic feet to Northwestern, and get a total of 3270 billion cubic feet. Now, can you tell me on what pressure base did you calculate these sales of gas?

A Well, they are consistent with whatever the pressure base is on which we are now delivering gas in the various parts of our system. It would be about 13, a little better than  $13\frac{1}{4}$  pounds absolute from the Canadian Western system, and I think about 13.8 in the Northwestern system. The figures would be slightly affected if you took it to 14.4 and 60, which is the normal field basis in the Canadian Western system. It might be reduced by 6 or 7 or 8%. In the



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Northwestern system I don't think it would be reduced at all, because the field meters there indicate in total just what the customers' meters do. So that in all there might be a difference of 3%, which is 2 billion out of our figures, which is not significant.

Q My own thought was, I was trying to arrive at a basis of comparison with Mr. Sample's total of 2784 billion, which is based entirely on 14.4 and 60°. I understand that the information that you have just given, that it averages out at 50° rather than 60, does it not?

A Yes.

Q Well, I take an arbitrary amount of 10% as being the difference between 13.4 and 14.4, the 13.4 at 50°, and the 14.4 at 60°.

A I think you would be too high, Mr. McDonald.

Q It might be too high?

A I am going by the actual sales figures and field output figures and I would say 3 or 4% would be much closer.

Q Well, to that extent anyway....

A Yes.

Q ....the 2784 billion total demand, being the submission by Mr. Sample, could either be increased or yours increased to get it closer together?

A That is correct.

Q And you feel that the year 1960, as fixed by your Company, the basis for the 50-year average is a reasonable approach to the problem that we have now for this Board to consider?

A Well, I don't know any other way to do it, Mr. McDonald, and I think it is about right. I think it is completely unrealistic to try to estimate each year for the next 50





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years. This is one way of doing it.

Q And in arriving at 1960 you have taken into account population trends and known business developments, and you have added a population figure set out in Exhibit 41 as supplemented by this Exhibit here?

A That is correct.

MR. STEER: 42.

MR. McDONALD: Exhibits 41 and 42.

Q And dealing with this matter of steps taken to provide adequate long range resources on page 3, you refer to the allocation to another field of a substantial portion of Turner Valley's market, and in your exhibit, which is filed, the last exhibit, you indicate in this preliminary survey, that in the year 1952 possibly  $9\frac{1}{2}$  billion feet could be taken from Jumping Pound, and to some extent that would be a reduction of the take from Turner Valley, would it not?

A It would be a reduction in the take from Turner Valley, not what the take from Turner Valley would be if Turner Valley receives all the market, yes.

Q Turner Valley, except for peak demand, could supply the base load for the market without the support of Jumping Pound?

A That is correct.

Q Now, I notice here that you refer to the fact that the allocation of a portion of Turner Valley's market to another field might result in a financial loss to the utilities in Turner Valley. I am just going to raise this point. The utilities actually will not lose money. Any loss they take will be absorbed in the rate eventually



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by some consumer, would it not?

A I would just like to find that sentence, Mr. McDonald.

Q It is in the middle of the second last paragraph on page 3.

A You see what I say, "would have resulted either in financial loss to the utilities in Turner Valley or a sharp rise in the price of Turner Valley gas."

Q Yes. The only thought I had in mind was that the utilities would not take a loss, it would necessarily result in a rise of price to the consumer.

A That is true up to a point, but you cannot continue to increase the price of gas out of Turner Valley for ever. It might get to a point where you couldn't sell it, and you would have to take a loss.

Q And the question is, what is the economic price at which gas can be sold without bringing into effect the spirals, as Mr. Fenerty has dealt with for so long?

A That is correct.

Q Now, the extent to which you could reduce the take from Turner Valley is limited, is it not, Mr. Brownie, by the effect it would have on the conservation of the gas that is produced from the oil wells?

A Yes.

Q You are not suggesting that the reduction in Turner Valley take by the Canadian Western would go to the extent that more gas would be flared than is now being flared there?

A No.





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Q Dealing with the Grid system, Mr. Brownie, do you suggest a Grid system could be built without export, without the support of an export pipeline or pipelines, within the economic limits and capacities of the consumers in Alberta to pay for it?

A Only to the extent that necessary additions to existing pipeline systems in the Province are built for the purpose of meeting additional peak load requirements or connecting up new wells, and to the extent these additional pipelines should be built and will be part of the ultimate Grid.

Q For instance, building a pipeline from Calgary to Turner Valley, or to Jumping Pound, rather, may be part of the Grid eventually?

A Yes.

Q That is something that could be done now?

A Yes.

Q But building a pipeline from Pincher Creek might be a much larger project?

A If there was no export for 10 years and Jumping Pound had been connected to the Canadian Western system, and Jumping Pound, with the other fields, had become inadequate it might be necessary to build a pipeline down to Pincher Creek and that pipeline could be part of the ultimate Grid.

Q In the first paragraph on page 4, you referred to the fact that the deliverability of the fields you have mentioned, including Jumping Pound, will again be inadequate to meet rising peaks. I suggest 10 years is just about the time you will have to build that pipeline to Pincher Creek or



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to some other similar field. Can you go that far, or have you made such a study?

A I can not confirm that at the moment because I do not remember the figures. That could be right. I could check that.

Q So that this question of having not the entire Grid but the larger part of the Grid is merely a matter of time, in the Province? Is that a fair summary of the situation?

A You mean, this apart from export?

Q Apart from export, yes.

A I do not know whether it is fair to say that the larger part of the Grid, but certainly some part of it.

Q I was interested in one other point in regard to the storage in Bow Island. No, I think that is the other exhibit. I will deal with that later. In regard to gas from the Leduc field, which will shortly be delivered to the Northwestern system, what is the Btu. value of that gas?

A I would not like to quote a figure, Mr. McDonald. It is somewhat higher than the Kinsella gas.

Q It is in the neighbourhood of 1300?

A Something in that order.

Q Is it not necessary to put in considerable equipment to take care of the difference in the Btu. value as between 1300 and the 950 Btu. value of the Viking-Kinsella gas?

A That is right.

Q Can the two be mixed without installing equipment to reduce the Btu. value of the Leduc gas?

A Only if the proportion of the higher heat bearing gas





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is kept down below certain levels.

Q Is this problem of dealing with two different Btu. values going to increase as more Leduc gas is used in the North-western system?

A I don't think so.

Q What I have in mind is, now you could deliver this gas direct to your Edmonton City boilers and not have any worry of mixing it with the gas from Viking-Kinsella that is in general use. Subsequently, if you have to mix it in for general use would it increase the cost or would it increase the danger to use the gas in Edmonton?

A I do not think it would increase the danger, no.

Q Would it increase the cost?

A The more you have to handle of it, the higher the cost would be.

Q So that if Edmonton could get a supply of gas which was of relatively the same Btu. value, that cost, whatever it is, would be eliminated from the rate?

A Yes.

Q Now, you refer in this last exhibit, to the capacity of the system, the capacity of the Bow Island and Foremost fields and you say, "The 40 million cubic feet per day available from the Bow Island and Foremost fields represents balanced peak deliverability of the wells and the pipeline system." Do I take it that you mean that the maximum withdrawal that can be taken from those fields is that amount, regardless of the amount stored there? Even if you drilled enough wells in Bow Island and stored 50 billion, could the maximum amount you draw per day be



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100 million or 60 million a day? Could you get it into the system?

A If you increase the deliverability of the supply in the Bow Island field for the purpose of supplying to a market, you would have to instal additional pipeline capacity to get it to that market.

Q In other words, you would have to build a new pipeline to Bow Island?

A Yes, or loop partially at least our existing pipeline.

Q And if the majority of the demand for gas was in the vicinity of Calgary it might be cheaper to build a pipeline to Pincher Creek rather than go to Bow Island?

A It might.

Q Was it your idea with regard to Jumping Pound that Jumping Pound gas would be taken on a base load basis, that is, an equivalent amount each day in the year?

A No. Certain assumptions were made in making up these figures. A well-drilling program was projected and certain deliverabilities were assumed from those wells and on that basis Turner Valley and Jumping Pound were given a market sharing position in relation to the capacity of the two fields to produce, somewhat in the same way as different wells are allocated a share of the market out of Turner Valley itself. Admittedly, the information that was available to us was on the deliverability of Jumping Pound was very, very sketchy. All we had was what was before the Dinning Commission and that was supplemented yesterday by an exhibit which you put in.





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But even that does not mean very much to us because in our experience of back-pressure tests you can get almost any sort of an answer you like, depending on how you take them. We would like to know how the tests were made before we would make any reliable estimate of what the capacity of those wells would be.

MR. McDONALD: I think we could continue in the morning.

(At this stage the Hearing was adjourned until 9:30 A.M., 13th April, 1950.)









